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THE CHEMICAL COMPOSITION OF THE SWEAT OF THE HORSE.

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In the investigations into the physiological chemistry of the horse's body, which are being carried out in this school, I have been led to examine the secretion from the skin, for the reason that ample material has recently presented itself, during a course of experiments on the chemical composition of the expired air during work. The horses from which the material for analysis was collected were being worked at known velocities, in order that I might determine the oxygen absorbed and the carbonic acid given off from the lungs. The animals were in perfect health, but were getting their winter coats, and although in fair working condition, yet they sweated very freely.

The sweat was collected from the skin by means of a spatula, selecting only those parts where it came away as a clean fluid; it was then filtered. It will thus be seen that what I have to describe is really the mixed secretion from the skin of the horse. I do not know of any practicable means of obtaining the secretion of the sweat glands by itself.

The mixed secretion, which for the purpose of description will be known in this paper as sweat, is always turbid, viscid, yellowish white in colour, and in reaction strongly alkaline; I have never found any exception to this reaction, but I think I have observed that the more distressed the horse becomes the less alkaline is the fluid. It is stated that the sweat of man is alkaline. I have *always* found it acid. The alkalinity of horse's sweat is partly volatile, and

partly fixed; that is to say, much of the alkalinity may be got rid of by boiling the fluid. I am of opinion that the volatile alkalinity is due to carbonate of ammonia; the fixed alkalinity is probably due to potash, but on this point I am not certain. In 100 parts of sweat the volatile alkalinity was equivalent to ·18144 grammes of caustic potash, whilst the fixed alkalinity was equivalent to ·09856 grammes.

In weighing out sweat for analysis, I was struck by the remarkable manner with which it lost weight. I have in an earlier paper mentioned the same fact in connection with horn; in sweat it is even more marked. It is only with the greatest difficulty and rapid weighing that its weight can be ascertained; *every second it is getting lighter*, owing to evaporation. I think this shows us how well the fluid is composed for the purpose of evaporation from the skin.

I have often wondered what the white foam we see on sweating horses is due to; we notice it particularly where any friction has occurred from saddlery, harness, or even from parts rubbing together, as between the thighs. We never see it, or at least I have never heard of it, in man, and I believe it is peculiar to the horse. My idea is that it is a kind of soap, formed between the alkaline sweat and the fatty material from the sebaceous glands. When this froth is dried, it leaves a fine sandy-looking residue.

I have found in every specimen of sweat examined *a considerable quantity of albumen;* this albumen exists in two forms—the smallest proportion is serum albumen, the largest alkali albumen. I was more than astonished when I came across this remarkable fact, and I think we may see in it the keynote to that matter of every-day observation, the loss in condition resulting from sweating. No loss in condition would result were simply water and salts to be poured out on the surface of the skin, for these could be immediately replaced; the something which does pull horses down in condition is the albumen poured out through their skin, which is in the proportion of about three and a half per cent. of the fluid excreted; this represents something very considerable. Can we deny the value of clipping horses, with this fact before us?

In boiling one specimen of sweat with HNO_3, an odour of butter came from the boiling liquid.

I have examined one specimen of sweat in which I found *no* serum albumen, though there was much alkali albumen. All the other specimens have yielded both serum and alkali albumen in the proportion of, roughly, one of the former to eight of the latter.

The fat in the fluid examined was small, under one-half per cent.

The salts found in sweat are chloride of sodium in large quantities, traces of lime, a well-marked quantity of magnesia, traces of phosphoric acid, potash in varying quantities, and a very considerable quantity of sulphates and ammonia. The whole making up about three and a half per cent. of salts.

The chloride of sodium is so large, that it readily crystallises when the sweat is allowed to evaporate spontaneously; it may then be seen in large cubical masses. In a specimen of sweat diluted with water, which had been standing over four months, I found a large number of crystals resembling oxalate of lime. In another specimen of sweat, I found that the filter paper used in filtering it became, in the course of a few days, covered with long shining needles like benzoic acid, and when the sweat itself was evaporated to dryness and allowed to stand, it also became covered with these most beautiful crystals, which I regard as chloride of sodium; at any rate, they gave a marked silver reaction, and rendered the filter paper very damp. When sweat is dried and left for some time in a damp place, it smells like mice. When the diluted fluid is left standing some weeks, it has an unpleasant musty odour. Another specimen had an odour of horses. I could find no urea in sweat.

COMPOSITION OF THE SWEAT OF THE HORSE.

Water	...	92·6178.		
Organic matter		3·8710	Serum albumen ...	·3302
			Alkali „ ...	3·0508
			Fat	·4900
Salts	...	3·5112	Chlorides, very large.	
			Lime, small.	
			Magnesia, large.	
			Sulphates, very large.	
			Potash, large ?	
			Ammonia, large.	
			Phosphates, traces.	
		100·0000.		

A pint of sweat will contain ·676 oz. of albumen; assuming oats to contain on an average 12 per cent. albuminoids, the albumen in one pint of sweat would be represented by 5·633 oz. of corn, but as only 87 per cent. of the albuminoids in oats are capable of being digested and converted into tissue, we must really give 5¾ oz. of oats to equal the albumen found in one pint of sweat.

I do not know how much sweat a horse with a long coat loses at laborious work, but I think we might state, as a practical way of dealing with the subject, that clipping must be equivalent to at least an extra pound of corn per diem.

ANATOMICAL AND PHYSIOLOGICAL OBSERVATIONS ON HORSES IN INDIA.

BY JOHN HENRY STEEL, F.R.C.V.S., PRINCIPAL, BOMBAY VETERINARY COLLEGE.

THE following observations made on *post-mortem* examination of twelve horses of the 1st Madras Light Cavalry, cast and destroyed in August, 1884, may be found of some interest.

The horses ranged in age from six years ten months to nineteen years five months, the average being about thirteen years six months; thus they were all matured animals; nine were geldings, and three mares; six were Persians, three Northerns, two Capes, and one Australian. They averaged a little over fourteen hands two inches. Four were greys, one black, the rest browns and bays. All were crippled more or less, but some of the older ones were destroyed to prevent their falling into bad hands, after long and good service. The Capes and Northern horses were notable as having done good service, but the oldest horse of all was a Persian.

The following were the Weights of some of the Body Organs in pounds avoirdupoids :—

ORGANS.	MAXM.	MINM.	AVERAGE.	REMARKS.
Lungs (right)	7	4	5	
„ (left)	5	4	$4\frac{1}{12}$	One case of long-standing pleuritic adhesions.
Heart	6	5	$5\frac{11}{12}$	
Stomach	3	2	$2\frac{8}{12}$	Bots present in each case, thread-worms in six, worm cysts in two.
Stomach Contents	8	2	$3\frac{7}{12}$	
Liver	11	8	$8\frac{11}{12}$	
Kidney (right)	1	1	1	
„ (left)	1	1	1	
Spleen	4	2	$2\frac{7}{12}$	In one case a few lymph deposits and old scars on a small spleen.

The following are approximate estimates of Lengths of Intestines in feet:—

BOWEL.	MAXM.	MINM.	AVERAGE.	REMARKS.
Small	72	20	$67\frac{1}{12}$	
Large cæcum	$5\frac{1}{2}$	$4\frac{1}{2}$	$4\frac{3}{4}$	
Double colon	$18\frac{3}{4}$	$14\frac{1}{2}$	$17\frac{1}{4}$	
Single colon	18	$12\frac{3}{4}$	$14\frac{1}{2}$	
Rectum	1	$1\frac{1}{2}$	$1\frac{1}{2}$	
Total large	42	33	39	
Total bowels	111	99	$105\frac{1}{2}$	

The following were found to be the Conditions of the Organs and their Contents at various Periods after Feeding :—

Since last Fed.	Stomach Contents.	Small Intestines Contents.	Large Intestine Contents.		
			Cæcum.	Double colon.	Single colon.
I. 4 hrs., day-time.	Much coolthie in pyloric part.	Slime in first third, liquid in middle, and solid matter in last third.	Full of pulpy food, some coolthie and gravel.	Dry; at first much coolthie.	Dry.
II. 5 „ „	Much coolthie.	A small amount in middle third.	Contents very liquid	Pulpy matter; coolthie in part 2.	Much, dry.
III. 7 „ „	No coolthie; a small amount of fresh grass; villous coat purple.	A little juice here and there.	A fair amount of rather watery matter; much coothie.	Full of moist matter.	Full and moist.
IV. 12 „ night.	Coolthie, yellow in colour; some grass present.	Sand in several parts; a fair amount of food in ileum.	Whole large bowel full of rather watery matter.		
V. 12 „ „	A very little moist food.	A small amount of juice in first third; slime at middle of duodenum.	Very watery.	Full; a little sand.	Dry.
VI. 12½ „ „	A small amount of coolthie.	Small amount in ileum.	Full, watery.	Full, watery.	Full, moist.
VII. 13 „ „	A moderate amount of food.	Slime at intervals, and occasionally mixed with a little coolthie; in ileum much watery fluid and some grain.	Watery.	Watery, gravel in 1st and 2nd parts.	Full.
VIII. 13 „ „	Watery; a little coolthie and grass.	Much slime about the middle; some bowel juice in ileum.	Food passing from small into large bowel; much watery matter, and all large bowels full.		
IX. 13½ „ „	Fairly full; a little coolthie.	Slime and juice at intervals in ileum; some food near ileo-cæcal valve.	Rather watery.	Much grain. All large bowel full.	
X. 14 „ „	Liquid contents; a small amount of yellowish coolthie.	Slime in first third, slime and mucus in middle, and a little coolthie in posterior third.	Fair amount, not very watery.	Rather watery. [part.	Full.
XI. 15 „ night and day	A little coolthie and grass.	Much slime and juice in middle third; slime in posterior third.	Dryish.	Much sand in fourth All large bowel full.	
XII. 20 „ „	Only gastric juice, about a quart.	A little watery fluid in first third; a small amount of juice in the duodenum.	Much watery fluid, a little sand, and a little food.	Fairly full.	Dry.

Thus it seems, *as regards gastric digestion*—(1) That it progresses more rapidly during daytime than at night, or rather in early morning than in the evening. In the former case no grass given after, in the latter the usual ration. (2) An ordinary feed of coolthie takes about six hours (morning) to digest. (3) About fourteen hours is the time before the stomach becomes empty after the evening feed and grass.

As regards digestion in the small intestine—A (1) It is here remarkable that in no case was food found in duodenum. This is probably an effect of peristaltis. The "slime" found was probably chymous material, the "watery fluid" probably unmixed intestinal or gastric juice. (2) The rare detection of food in the small bowel leads to suspicion that its passage through there is rapid, and pellet by pellet, as in case of the œsophagus, except that the pellet becomes impregnated thoroughly with intestinal secretion, and some delay occurs near the ileo-cæcal valve. (3) The supply of intestinal juice in jejunum seems almost constant.

As regards digestion in the large bowel—B (1) In a large proportion of cases the cæcal contents were watery, tending to support the commonly accepted view that the cæcum is a receptacle for water. *It is not recorded when the horses were watered last.* (2) The cæcum always seems to contain something, liquid or solid. At any rate, cæcal digestion is going on for fourteen, fifteen, or even twenty hours after ingestion of food. (3) The relations between fulness of stomach and cæcum are not definite.

C. *Colon, double:* (1) Seven hours to thirteen hours after feeding seems the time of maximum occurrence of solid matter in the colon. (2) The watery state of cæcal and colal contents are contemporaneous.

D. *Single:* (1) About the time when gastric digestion is going on in ordinary routine the rectal contents are dry. (2) When the cæcum and double colon are full of moist contents, so too is the single colon, as a rule. (3) From twelve to fifteen hours after feeding we may expect to find the single colon full.

Liver Abnormalities.—In no case was the liver free from disease, the following conditions being present: calcareous spots in six (only a few in three of these); lymphy deposits in eleven, generally on the anterior surface, varying from "slight" to "much," or "lymph threads;" softness, one; cysts, one; atrophy, three.

The parasites present in these horses have been elsewhere noted, *i.e.*, in a paper contributed to the Journal of the Bombay Natural History Society. A small amount of chalky deposit on the lining membrane of the bowel was noted in one case.

Sand was present in the small bowel in one case, in the cæcum in two cases, in the double colon in three. These observations are crude, but original, and may prove suggestive, and lead to more exact conclusions after future observations, also to correction of the conclusions here drawn. The records were all made in the rough-and-ready way of a practical observer, rather than on the careful and exact methods of the worker in the laboratory.

THE VALUE OF INOCULATION IN PLEURO-PNEUMONIA, AS DISCLOSED BY *POST-MORTEM* EXAMINATION OF THE VICTIMS.

BY JAMES MC CALL, F.R.C.V.S., PRINCIPAL OF THE GLASGOW VETERINARY COLLEGE.

(*Continued from p.* 10.)

In my evidence I say, "On 3rd March I found four cows showing symptoms of Pleuro." These are the animals entered under dates 4th and 7th, removed and slaughtered; and I now ask Mr. Rutherford if, when informed by the owner on the 3rd of March that I had resolved on slaughtering all four animals next morning, he did not the same evening write me a note requesting that three of them might be left, and only one killed, as "they could not harm their neighbours, and that the outbreak was practically at an end."

Influenced by his request, I removed only two on the 4th, and the other two I felt compelled to remove on the 7th. Then as to the last animal removed, in my evidence I stated, "On the 21st March a brown cow purchased at Wishaw exhibited symptoms of Pleuro-pneumonia. This is one of the three cows purchased at Wishaw for preventive inoculation, but as no compensation would be given, I allowed her to wait till 4th April. I would not have allowed her to live so long, except for the inoculation, in case it should be said I was in too great a hurry."

Further comment I do not feel inclined to make, although the occasion is tempting, and I now leave the verdict (as to my remissness in the removal of the animals to slaughter) with every confidence in the hands of my professional brethren.

History, etc., of the Second Outbreak of Pleuro-pneumonia in Mr. Salmond's Stock.

In consequence of information supplied to me by the police, I visited Mr. Salmon's cow-sheds on 16th June, 1888, and in course

of my inspection of the stock I detected a cow (No. 1) exhibiting symptoms of Pleuro-pneumonia. In the absence of Mr. Salmond, Jun., I arranged with Mrs. Salmond that the animal would be removed to the slaughter-house the following morning. The float-cart was accordingly sent, but Mr. Salmond objected to the animal's removal, giving as his reason that the cow was "getting better." I mention these circumstances to show that Mr. Salmond has a mind and will of his own, and is not the guileless and ingenuous "son" Mr. Rutherford would incline us to believe. I may further mention that the cow was not given up until I had written an official letter, and until (as I was informed) Mr. Rutherford had also examined the animal.

Before proceeding further it is necessary that I should explain (1) that the history of each animal, as recorded, was voluntarily supplied to me by Mr. Salmond, Jun., and that he alone is responsible for the accuracy or otherwise of the same; (2) that the statement in each case as to temperature, pulse, etc., is given on the authority of one of my assistants, Mr. Matthew Graham, M.R.C.V.S.; (3) that the statements regarding the *post-mortem* appearances emanate from the pen of my colleague Professor Limont; and (lastly) that I superintended the removal of all the animals, the inspection of the carcases as to their fitness or otherwise for human food, fixed the compensation to be paid the owner, through him invited Mr. Rutherford to come to Glasgow to inspect the organs, detained the diseased lungs for days, and in short, personally discharged all the duties appertaining to my office as Inspector to the Local Authority of Glasgow.

No. 1 *Cow.*—*History.*—Bought 7th March, 1888, in Glasgow, and said to have come from Limerick. Inoculated by Professor McQueen on 7th April, and who at same time inoculated other seven cows. Appeared in health till a fortnight prior to removal to slaughter-house on 20th June.

Post-mortem.—Left lung extensively hepatised and grown to chest.

Diagnosis.—Pleuro-pneumonia of recent origin.

No. 2 *Cow.*—Large brown cow, examined 21st June. Breathing disturbed. Temp., 105°. Pulse, 65. Respirations, 25. Coughing, and not feeding well.

History.—Purchased 1st May, 1888, at Paisley Auction Mart. Fed and milked well till four days ago. Not inoculated. Slaughtered 22nd June, 1888.

Post-mortem.—Whole lung examined, lying on the table with the inferior (convex) aspect of the trachea uppermost. In this position the aspect of the lung visible to the observer is called in the report "superior," the aspect on the table "inferior."

Report.—Second lobe from apex of right side is solid on its "superior" aspect, and there is thickening of the pleura towards the margin. On its "inferior" aspect there is similar thickening of the pleura over most of the surface, which is torn and rough, owing to the separation of pleuritic adhesions. These thickenings are hard and firm. On palpation, the solid portion is found to be a mass about the size of a very large clenched fist, of almost cartilaginous hardness. The hardness comes nearly to the "superior" surface (where there is thickening of the pleura), and quite to the "inferior" surface (where there is thickening of the pleura and separate pleuritic adhesions). On dividing the mass by a single incision, and then by another at right angles, it is found to be separated from the healthy lung tissue by a septum of solid connective tissue about half an inch thick. This septum is absent on the "inferior" aspect, because here the solid mass reaches the separated pleuritic adhesions. The lobules of the mass are separated by an excessive amount of connective tissue, exactly like that of the septum between the mass and the healthy tissue. The lobules themselves are solid, but friable, red when fresh cut, but rapidly becoming much darker when exposed to the air. The smaller bronchi in it may, perhaps, have somewhat thickened walls.

Diagnosis.—Encysted Pleuro-pneumonic lung-softening and breaking down not yet begun, is at last not visible to the naked eye. Encystment as thoroughly established as I have ever seen it.

No. 3 Cow.—History.—Purchased December, 1887, at Paisley. Fed and milked well till middle of March, 1888. As she was unwell from a suspected stomach affection at the time Mr. McQueen inoculated the eight cows, we did not inoculate this one. Slaughtered 22nd June.

Post-mortem.—Whole lung examined in same position as No. 2. Apical lobe of left lung encysted. The cyst-wall is formed, firstly, by a thickening of the pleura to the extent of one-half to three-quarters of an inch; secondly, by a septum of connective tissue, quite half an inch thick, between it and the healthy lung tissue. Both thickened pleura and septum are very hard and firm, so that the healthy lung can easily be dissected off the latter. On incising the "superior" aspect of the pleura, a yellow diffluent material welled out, and was found to form a layer from one-half to an inch in thickness. On sweeping the finger round in this layer under the pleura, it was found to be traversed by bands fixed to the deep surface of the pleura. Most, but not all, of these gave way readily. Some were ascertained to be small

hollow tubes. Below this yellow diffluent layer the lung was found to be solid, but very friable, pinkish in some places, but yellow elsewhere. At points it was yellow and approaching the consistence of porridge, but held together by the bronchi and overgrown connective tissue between the lobes. It contained what were apparently irregular cavities, but these were probably made in the cutting and handling of the lung. On incising the pleura on the "inferior" aspect, the yellow diffluent layer was found to be absent, the solid mass here reaching to the pleura. It had the same appearance as that above.

The solid central mass was now shelled out except where the large vessels and bronchi entered it, and a long, flexible probe passed from the trachea was found (upon dissecting down) to lie in a bronchus in the centre of the mass.

The deep surface of the septum between the mass and the healthy lung has on it bright red patches about the size of a shilling, apparently the result of hæmorrhage into it. In the central mass itself there were veins containing soft and recent clots. At the posterior extremity of the left lung there was a mass about the size of a gooseberry. It was apparently composed of tubercles.

Diagnosis.—Encysted pleuro-pneumonic lung encystment through softening and breaking down, proceeding from periphery towards centre, and complete as regards the yellow diffluent layer under the pleura. Communication between trachea and centre of the mass by open bronchi. Communication between vessels in centre of mass and pulmonary system.

No. 4 *Cow.—History.*—Purchased 17th April, 1888, at Paisley. Fed and milked well all through, and was never inoculated. Temp., 103⅗°. Removed for slaughter 22nd June.

Post-mortem.—Whole lung examined in the same way. In posterior part of right lung, about the middle of its margin, but not extending quite to it, was a large mass about the size of a goose's egg. On section its "superior" aspect was found to be separated from the pleura by a little healthy lung tissue; but on its "inferior" aspect it extended to the pleura, which was here sonewhat rough and thickened. There was overgrowth of the connective tissue separating its lobules. The lobules themselves were solid and red.

Diagnosis.—Pleura-pneumonic consolidation. In middle of left lung of same cow was an indurated lobule with bright red points. In the centre of one of the bronchial glands there was a stinking abscess.

No. 5 *Cow.—History.*—Purchased 17th April, 1888, at Paisley.

Fed and milked well. Never suspected anything wrong. Was not inoculated. Removed for slaughter 22nd June.

Post-mortem.—Whole lung examined in same way. Mass similar in every way to that in No. 4, except that it was not so sharply defined, had its lines of "overgrown" connective tissue between the lobules harder and narrower, its lobules not so red, and that there was not so much thickening of the pleura on its inferior aspect. On the "inferior" aspect of the same lobe, but two inches more in front, was a solid mass about the size of a small pullet's egg. In this one the lines of overgrown connective tissue are not so thick.

Diagnosis.—Two masses of pleura-pneumonic consolidation.

No. 6 Cow. — History. — Bought August, 1887, at Paisley. Inoculated 9th of September, 1887, by Mr. Rutherford. Always fed and milked well. Temp., 101½°. Pulse, 44. Respirations, 16. Slaughtered 23rd June.

Post-mortem.—Sound lungs. Good carcase.

No. 7 Cow. — History.—Bought at Wishaw October, 1886. Inoculated 9th February, 1887, by Mr. Rutherford, when Pleuro was raging in the byre. Never refused food, and always milked well. Temperature night before slaughter, 102½°. Pulse, 42. Respirations, 17. Slaughtered 23rd June, 1888.

Post-mortem.—Large hard mass in posterior part of right lung. Cross-section revealed a plum-pudding-like mass, about 4 inches by 5, of the colour of red granite. It was solid throughout, but friable. One half shelled out almost by its own weight, and showed a yellow, porridgy surface. The other half shelled out in the same way, except where large bronchi entered it. A probe was passed along one of these large bronchi into a bronchus in the substance of the solid mass. Each half of mass extended to the pleura over about half its surface, and the pleura in contact with it was thickened to the extent of a quarter of an inch or more. Elsewhere each half was to some extent separated by a connective tissue septum from the next layer, but at places there was complete continuity. This next layer was about an inch and a half thick. It consisted of solid, yellow, very friable lung tissue, which at places was nearly porridgy, but held together by the bronchi, etc. Outside this layer the relations varied. At some places there was thickened pleura; at others, lung mainly made up of very tough overgrown connective tissue; at others, solid lung, simply showing less degeneration than the layer itself; at others, lung apparently nearly healthy.

Diagnosis. — Encystment (partial and irregular) of pleuro-pneumonic lung of old standing. Softening and degeneration at the periphery. Communication between bronchi in centre of mass, and larger bronchi passing from it!!!

No. 8 *Cow.—History.*—Purchased August, 1887, at Paisley. Inoculated by Mr. Rutherford 9th September, one month after purchase. Considered healthy always, and is now thick fat. Temp., 101½°. Pulse, 47. Respirations, 14. Slaughtered 23rd June, 1888.

Post-mortem.—Both lungs diseased. Small bit of left lung showed a mass the size of a hen's egg. On section it showed typical "marbling" and "lymph." There was thickening of the pleura over it. Larger bit of the left lung very hard at places. Section showed the connective tissue between the lobules increased, and the lobules of a light greenish yellow colour.

Diagnosis.—Recent pleuro-pneumonic consolidation.

No. 9 *Cow.—History.*—Bought August, 1887, at Paisley. Inoculated by Mr. Rutherford, in September following. Thick fat; always fed and milked well. Temp., 101⅕°. Pulse, 50. Respirations, 16. Slaughtered 23rd June, 1888.

Post-mortem.—Numerous cysts, varying in size from that of a pea to that of a small hen's egg, with porridgy and cretaceous contents, subpleural and deep.

Diagnosis.—Tubercle.

No. 10 *Cow.—History.*—Bought December, 1887, at Paisley. Fed and milked well. Inoculated by Mr. Rutherford. Temp., 101⅗°. Pulse, 45. Respirations, 17. Slaughtered 25th June.

Post-mortem.—Whole lung. A considerable number of cysts, about the size of small marbles, in both lungs. Contents porridgy and cretaceous.

Diagnosis.—Tubercle.

No. 11 *Cow.—History.*—Purchased January, 1888, at Paisley. Always fed and milked well. Inoculated by Mr. Rutherford. Temp., 101⅗°. Pulse, 45. Respirations, 17. Slaughtered 25th June, 1888.

Post-mortem.—Whole lung. Many cysts about the size of a marble in both lungs. Contents porridgy and cretaceous. Many have a number of small solid white nodules just outside their capsules.

Diagnosis.—Tubercle and secondary tubercle. Posterior tip of left lung of same cow has pleura and lung substance somewhat injected.

No. 12 *Cow.—History.*—Purchased August, 1887, at Paisley. Always fed and milked well. Inoculated by Mr. Rutherford in September. Slaughtered 25th June, 1888.

Post-mortem.—Bit of lung. Numerous very small nodules, which have in their centres single, distinct, irregular, coral-like concretions. Excess of mucus in bronchi.

Diagnosis.—Peculiar tubercles. Tip of the bit shows some injection of the pleura.

No. 13 *Cow.*—*History.*—Bought December, 1888, at Paisley. Inoculated by Mr. Rutherford. Milked well. Slaughtered 25th June, 1888.

Post-mortem.—Two bits of lung. One bit shows cysts with porridgy and cretaceous contents, and pleura somewhat injected.

Diagnosis.—Tubercle. The other bit shows lobules, though of a pale greenish-yellow colour, and exuding much fine froth on pressure.

No. 14 *Cow.*—*History.*—Bought at Wishaw August, 1886. Inoculated February, 1887, by Mr. Rutherford, when pleuro was raging in the byre ! ! ! Always fed and milked well, but temperature rose to 106°, and continued so for eight days, at time of inoculation. Slaughtered 26th June. Temperature night before slaughter, 101$\frac{1}{5}$°. Pulse, 46. Respirations, 14.

Post-mortem.—Left lung grown to six ribs. One large bit of lung shows in its interior the wall of a cyst which has been incised and is now empty. The wall is distinct, but not very thick. There is a stinking mass of yellow diffluent material in cyst, about the size of a pigeon's egg, which forms a diverticulum of the main cyst. There are some thrombosed blood-vessels upon the deep wall of the main cyst.

Diagnosis.—Encystment of Pleuro-pneumonic lung of old standing.

No. 15 *Cow.*—*History.*—Bought at Paisley February, 1888. Inoculated in March by Professor McQueen. Fed and milked well up to 22nd June, 1888. Slaughtered 26th June. Temperature night before slaughter, 101½°. Pulse, 57. Respirations, 16.

Post-mortem.—Left lung grown to the sixth, seventh, and eighth ribs. One bit of lung: close together are two masses of solid lung, each about the size of a large walnut. They are of a muddy coffee colour, mixed with yellow, and are very friable. One is full of cavities, which are probably the result of handling.

Diagnosis.—Pleuro-pneumonic consolidation and degeneration.

No. 16 *Cow.*—*History.*—Purchased August, 1887, at Paisley. Inoculated by Mr. Rutherford September following. Always fed and milked well. Temp., 101½°. Pulse, 45. Respirations, 17. Slaughtered 26th June.

Post-mortem.—Both lungs diseased. One bit larger than a bullock's heart. Pleura, pretty well all over, shows lymph and granulations from recent Pleurisy. The lung contains an immense number of cysts, most of them about the size of a walnut. In parts these cysts touch each other, and here the lung is nothing

more than a mass of them. Each has a distinct wall of connective tissue. The contents of many are bright yellow and completely diffluent, exactly like the yellow diffluent layer in No. 3. Some, however, have a more solid centre, this centre being really cheesy when pressed between the fingers. There is no cretification whatever. When the diffluent and cheesy contents are carefully removed it is found that the cysts are more or less traversed by bronchi, into which a probe can be passed. They even form a kind of skeleton for the contents of some cysts. One smaller bit: exactly the same, but cysts fewer in number.

Diagnosis.—Numerous small Pleuro-pneumonic encystments; softening and degeneration (from periphery to centre) complete in many, nearly complete in the others.

No. 17 *Cow.—History.*—Purchased at Paisley February, 1887. Inoculated by Mr. Rutherford eight days after purchase, and when Pleuro-pneumonia was in the byre. This is one of the experimental animals allowed to be purchased at the time for preventive inoculation. Temperature night before slaughter, 101$\frac{1}{5}$°. Pulse, 44. Respirations, 16. Always fed and milked well. Slaughtered 26th June.

Post-mortem.—Pleuro-pneumonic consolidation. Both lungs extensively hepatised, and deposits of tubercles.

No. 18 *Cow.—History.*—A Canadian cow, purchased November, 1887. On arrival in Glasgow, inoculated February, 1888, by Professor McQueen. Always fed and milked well. Slaughtered 27th June, 1888. Temperature night before slaughter, 101$\frac{1}{5}$°. Pulse, 45. Respirations, 15.

Post-mortem.—Upper division of right lung grown to tenth, eleventh, and twelfth ribs. One large bit of lung: pleura on both sides is thicker than usual. The lung contains a hard mass about the size of an orange. On cross-section of this mass, a somewhat smaller solid mass was shelled out of its interior. It almost fell out by its own weight. Its surface was yellow and porridgy. On section its substance proved to be pinkish yellow, solid but friable. The wall containing it was of connective tissue, and about one-eighth of an inch thick, but covered internally by branching tubes. At one point outside the cyst the lung was tough, pale greenish-yellow, and frothy, as in No. 8.

Diagnosis.—Encystment of Pleuro-pneumonic lung. Softening and degeneration begun.

No. 19 *Cow.—History.*—Purchased in Glasgow Market December, 1886. Inoculated by Mr. Rutherford February, 1887, when Pleuro-pneumonia was raging in byre. Slaughtered 27th June. Temp., 101$\frac{2}{5}$°. Pulse, 44. Respirations, 15.

Post-mortem:—A few cretaceous cysts. Other porridgy and

cretaceous cysts, varing in size from that of a horse-bean to that of a small walnut.

Diagnosis.—Tubercle. Part of lung is tough, pale greenish yellow, and frothy. Pleura is somewhat thicker than usual.

No. 20 *Cow.*—*History.*—Purchased at Rutherglen September, 1886. Inoculated February, 1887, by Mr. Rutherford, when Pleuro was raging in byre. Always fed and milked well. Slaughtered 27th June.

Post-mortem.—Tuberculosis, same as No. 19.

No. 21 *Cow.*—*History.*—Purchased December, 1887, at Paisley. Inoculated same month, by Mr. Rutherford. Always fed and milked well. Slaughtered 27th June. Temp., 101½°. Pulse, 45. Respirations, 15.

Post-mortem.—Sound lungs and good carcase.

No. 22.—*History.*—Purchased at Paisley February, 1888. Inoculated same month, by Professor McQueen. Always fed and milked well. Slaughtered 28th June. Temp., 101½°. Pulse, 44. Respirations, 14.

Post-mortem.—Sound lungs and good carcase.

No. 23 *Cow.*—*History.*—Purchased August, 1887, at Paisley. Inoculated November, 1817, by Mr. Rutherford. Always fed and milked well. Slaughtered 28th June. Temp., 101½°. Pulse, 44. Respirations, 14.

Post-mortem.—Sound lungs and good carcase.

No. 24 *Cow.*—*History.*—Purchased December, 1887, at Paisley. Inoculated same month, by Mr. Rutherford. Always fed and milked well. Slaughtered 28th June. Temp., 101⅕°. Pulse, 45. Respirations, 14.

Post-mortem.—Sound lungs and good carcase.

No. 25 *Cow.*—*History.*—Purchased at Paisley September, 1887. Inoculated by Mr. Rutherford. Always fed and milked well. Slaughtered 28th June. Temp., 101⅗°. Pulse, 46. Respirations, 16.

Post-mortem.—Sound lungs and good carcase.

No. 26 *Cow.*—*History.*—Purchased at Paisley December, 1887. Inoculated same month, by Mr. Rutherford. Always fed and milked well. Slaughtered 29th June.

Post-mortem.—Sound lungs and good carcase.

No. 27 *Cow.*—*History.*—Purchased at Paisley December, 1887. Inoculated same month, by Mr. Rutherford. Always fed and milked well. Slaughtered 29th June.

Post-mortem.—Sound lungs. Fair carcase.

No. 28 *Cow.*—*History.*—Purchased at Paisley December, 1887. Inoculated same month, by Mr. Rutherford. Always fed and milked well. Slaughtered 29th June.

Post-mortem.—Sound lungs. Fair carcase.

No. 29 *Cow.—History.*—Purchased at Paisley September, 1887. Inoculated October, 1887, by Mr. Rutherford. Always fed and milked well. Slaughtered 29th June.

Post-mortem.—Sound lungs.

No. 30 *Cow.—History.*—Purchased at Paisley February, 1888. Inoculated by Professor McQueen, April 7th, 1888. Fed and milked well. Temp., 101·1°. Slaughtered 2nd July.

Post-mortem.—Left lung grown to sixth, seventh, and eighth ribs. Posterior lobe of both lungs voluminous and œdematous. Posterior lobe of right lung badly affected with tubercles of various sizes, all having liquid and cretaceous or (oftener) porridgy and cretaceous contents. Two large ones on the "inferior" aspect had thickening of the pleura over them. One of these had liquid contents, bronchi traversing it, and secondary tubercles around it. On the superior aspect of the same lobe was a rather deeply seated hard mass. On cross-section it was found to be a solid, but friable spherical mass, about the size of a Tangerine orange, enclosed in a rather thin capsule. It was pinkish yellow in colour. One half was shelled out almost by its own weight. It was yellow and porridgy on the surface. The other half, along with its capsule, was cut out and preserved. The large bronchus supplying this portion of lung was slit open. It showed several translucent nodules upon its lining, especially where smaller branches were given off. In the trachea itself there were some tubercular ulcers.

Diagnosis.—Pleuro-pneumonic consolidation and tubercle.

No. 31 *Cow.—History.*—Purchased March, 1888, at Paisley. Inoculated by Professor McQueen, April 7th, 1888. Slaughtered 2nd July.

Post-mortem.—Sound lungs. Sound carcase.

No. 32 *Cow.—History.*—Purchased at Paisley August, 1887. Inoculated September 9th following, by Mr. Rutherford. Slaughtered 2nd July, 1888.

Post-mortem.—Sound.

No. 33 *Cow.—History.*—Purchased at Paisley November, 1887. Inoculated by Mr. Rutherford December 31st, 1887. Temperature increased, and the animal evidently unwell for eight days in February, 1888. Temp., 1st July, 101½°. Pulse, 44. Respirations, 17. Slaughtered 2nd July, 1888.

Post-mortem.—Left lung grown to chest extensively. All parts of both lungs show tubercles, and especially collections of tubercles with porridgy and cretaceous contents. There is a large mass on the "superior" aspect of the posterior lobe of left lung. There is a still larger mass, the size of a large lemon, on the "inferior" aspect of the same. Over the larger masses the pleura is thickened.

In the last-mentioned mass the connective tissue is greatly overgrown and very hard. It cannot be very distinctly separated from the walls of the tubercular cysts which have replaced the lobules. When the contents of these cysts are turned out the connective tissue and bronchi are left as a complete skeleton, which formerly supported the porridgy and cretaceous material replacing the lobules. The bronchi in this mass were plugged by yellow catarrhal material. In connection with it there was a subordinate mass, the size of a small hen's egg. This consisted of numerous yellow lobules, about the size of a small Indian pea. They gave each lobule the appearance of a bunch of currants.

Diagnosis.—Pleuo-pneumonic consolidation and tubercle.

No. 34 *Cow.—History.*—Purchased at Paisley March, 1888. Inoculated 7th April, 1888, by Professor McQueen. Slaughtered 4th July.

Post-mortem.—Much the same as No. 33.

Diagnosis.—Pleuro-pneumonic consolidation and tubercle.

No. 35 *Cow.—History.*—Purchased September, 1887, at Paisley. Inoculated same month, by Mr. Rutherford. Slaughtered 4th July, 1888.

Post-mortem.—The lung, especially the large posterior lobes, is voluminous and very œdematous. At the posterior tip of the right lung there is slight evidence of recent pleurisy in the shape of "lymph." There are a few small collections of pearly tubercles on the "inferior" aspect of the posterior lobe of the left lung.

Diagnosis.—Tubercle.

No. 36 *Cow.—History.*—Purchased at Paisley November, 1887. Inoculated December 31st, 1887, by Mr. Rutherford.

Post-mortem.—Much similar to No. 35.

Diagnosis.—Tubercles.

No. 37 *Cow.—History.*—Purchased at Paisley March, 1888. Inoculated 7th April, by Professor McQueen. Slaughtered 4th July, 1888.

Post-mortem.—Sound lungs. Fair carcase.

Such, then, is the history and *post-mortem* of the second outbreak of Pleuro-pneumonia in Salmond's stock, and I contend that there is in it material to prove "that Mr. Rutherford's inoculation of the stock in February, 1887 (the date of the first outbreak), did not arrest the spread of the disease at that time, but that it actually carried it on, and was the cause of a second outbreak in June, 1888."

In order to save time and trouble, I now append a table showing the date of purchase of each animal, the date of inoculation and slaughter, and the *post-mortem* :—

	Purchased.	Inoculated.	Slaughtered.	*Post-mortem.*
1	7th March, 1888	7th April, 1888	20th June, 1888	Pleuro-pneumonia (recent).
2	1st ,, ,,	Not inoculated .	22nd ,, ,,	Encysted Pleuro-pneumonia.
3	December, 1887	,, ,,	,, ,, ,,	,, ,,
4	17th April, 1888	,, ,,	,, ,, ,,	Pleuro pneumonia consolidation
5	,, ,, ,,	,, ,,	,, ,, ,,	,, ,,
6	August, 1887	9th Sept., 1887	23rd ,, ,,	Sound lungs.
7	October, 1886	9th Feb., ,,	,, ,, ,,	Encysted Pleuro-pneumonia.
8	August, 1887	9th Sept., ,,	,, ,, ,,	Recent Pleuro-pneumonia consolidation.
9	,, ,,	,, ,,	,, ,, ,,	Tuberculosis.
10	December, ,,	Inoculated ...	25th ,, ,,	,,
11	January, 1888	,, ...	,, ,, ,,	,,
12	August, 1887	,, ...	,, ,, ,,	,,
13	December, ,,	,, ...	,, ,, ,,	,,
14	August, 1886	February, 1887	26th ,, ,,	Encysted Pleuro-pneumonia (old).
15	February, 1888	Inoculated ...	,, ,, ,,	Pleuro-pneumonia consolidation
16	August, 1887	September, 1887	,, ,, ,,	Pleuro-pneumonia encystments.
17	February, ,,	February ,,	,, ,, ,,	Pleuro-pneumonia consolidation
18	November, ,,	,, 1888	27th ,, ,,	Encysted Pleuro-pneumonia.
19	December, 1886	,, 1887	,, ,, ,,	Tuberculosis.
20	September, ,,	,, ,,	,, ,, ,,	,,
21	December, 1887	December, ,,	,, ,, ,,	Sound lungs.
22	February, 1888	February, 1888	28th ,, ,,	,,
23	August, 1887	November, 1887	,, ,, ,,	,,
24	December, ,,	December ,,	,, ,, ,,	,,
25	September, ,,	Inoculated ...	,, ,, ,,	,,
26	December, ,,	December, 1887	29th ,, ,,	,,
27	,, ,,	,, ,,	,, ,, ,,	,,
28	,, ,,	,, ,,	,, ,, ,,	,,
29	September, ,,	October, ,,	,, ,, ,,	,,
30	February, 1888	7th April, 1888	2nd July ,,	Pleuro-pneumonia consolidation and tubercle.
31	March, ,,	,, ,, ,,	,, ,, ,,	Sound lungs.
32	August, 1887	9th Sept., 1887	,, ,, ,,	,, ,,
33	November, ,,	31st Dec., ,,	,, ,, ,,	Pleuro-pneumonia consolidation and tubercle.
34	March, 1888	7th April, 1888	4th ,, ,,	Pleuro-pneumonia consolidation and tubercle.
35	September, 1887	September, 1887	,, ,, ,,	Tuberculosis.
36	November, ,,	31st Dec., ,,	,, ,, ,,	,,
37	March, 1888	7th April, 1888	,, ,, ,,	Sound lungs.

A brief analysis of the above may be rendered as follows :—

Cows inoculated, and found on *post-mortem* affected with Pleuro-pneumonia	11
Cows not inoculated, and found on *post-mortem* affected with Pleuro-pneumonia	4
Cows inoculated, and found on *post-mortem* affected with Tuberculosis	9
Ditto, sound	13
	37

To prove that the inoculation practised by Mr. Rutherford on the animals implicated in the first outbreak did not arrest the

spread of the malady, I again direct attention to the facts connected therewith, as given in detail, and more particularly to the circumstances connected with cow No. 9, inoculated 16th, 24th, and 29th February, 1887. This cow, it must be remembered, was purchased, along with other three, at Wishaw, for the express purpose of showing the value of inoculation, and how it would protect them from the disease Pleuro-pneumonia, which, as Mr. Salmond has frequently said, was at the time raging in his byres. It was in no manner benefited by the operation, but on the contrary, at the average period of inoculation it presented all the symptoms of an animal affected with the malady and which had contracted the disease by the natural method, namely, infection.

Coming down to the last outbreak, I shall now single out a few cases for analysis.

Case No. 7, we are informed, was purchased in October, 1886; inoculated 9th February, 1887, "when Pleuro was raging in the byre," and slaughtered 23rd June, 1888, so that this animal belonged to both outbreaks. She was not killed during the first outbreak, because she exhibited no well-marked symptoms of being affected with Pleuro; but nevertheless she was, and I contend the *post-mortem* proves conclusively that this animal alone was sufficient to keep up the infection in the byre, and to transmit the disease to every animal entering the cow-shed; for does not the *post-mortem* make it clear that the diseased portions of her lungs communicated with one of the large bronchi, and that a whalebone probe could be passed from it into the centre of the encapsulated mass?

In a lecture which I delivered to the members of the West of Scotland Veterinary Medical Association in January, 1886, on the disease in question, I stated, "If during the course of the malady, when contracted by the natural method, *i.e.*, inhalation of the virus, a portion of lung tissue becomes encapsuled (there is a proneness to this), although that animal to all appearance has made a complete recovery, and has been allowed to mix with sound animals for weeks and months with apparent impunity to those around it, still, whenever the time comes that the air penetrates the capsule, and the tissues liquefy, the imprisoned microbes will escape in the breath; and thus that animal, although recovered from the disease, and not now labouring under the specific disease, still has become anew a source of infection. Unfortunately, the same holds equally good with the inoculated animal if it should have contracted the seeds of the disease by the natural method prior to, or at the time of, its inoculation; and as inoculation is scarcely ever practised until the disease

has declared itself present on a member of the herd by the natural method, and consequently must have been present there for some weeks, the chances are that several animals are affected in every herd before inoculation has been had recourse to. Therein lies the danger, and no doubt is the reason that inoculated animals have been so frequently known to propagate Pleuro among sound animals."

Case No. 8 may be dismissed with the remark that if the inoculation was successful when practised on 9th September, 1887, it failed in protecting the animal eight months, as there can be no doubt that this animal had laboured under an attack of Pleuro-pneumonia for a period of not less than six weeks prior to its being slaughtered.

Case No. 14 is interesting in this respect, that it is the counterpart of case No. 7, and again establishes the direct connection betwixt the first and second outbreaks.

Case No. 16, like No. 7, has an open and direct communication from the encapsulated mass to the bronchi, and this animal, although inoculated, "and always fed and milked well," had the power to infect sound cattle, and was another and additional source of infection.

Case No. 17 again proves a close connection betwixt the first and second outbreaks, for it "is one of the experimental animals allowed to be purchased at the time (of the first outbreak) for preventive inoculation."

Case No. 18 is interesting, and clearly demonstrates where the cow got the infection. She was a Canadian cow, purchased on arrival in Glasgow, but not inoculated until she had been about three months in the byre.

Case No. 30 is the counterpart of No. 16.

Case No. 33 is a complicated case of Pleuro-pneumonia and Tuberculosis, and in no way benefited by inoculation.

Case No. 34 is much the same as No. 33.

With no desire to annoy Mr. Rutherford, but to arrive at the truth, I again ask him to reconcile these cases with the following statements, also contained in his evidence:—

"Is inoculation always effectual?"—"Yes; inoculation will undoubtedly always arrest and stamp out Pleuro-pneumonia."—"Vaccination does not always take with an infant; why should inoculation always take with an animal?"—"It is the case that it does. One thing you may depend upon is this, that if they will not take inoculation they will not contract the disease; it is impossible for an animal to resist inoculation, and subsequently to contract the disease." "In *post-mortem* examination I have never been able to meet any inoculated animals with the disease."

In the belief that I have proven (what I undertook to do), that inoculation did not arrest the spread of the disease in Salmond's stock at the time of the first outbreak, and that it was the keeping of inoculated but affected animals alive, in the belief that they were sound animals, and rendered so by inoculation, that worked out the second outbreak. I will now conclude by a quotation from the lecture I delivered, and to which I previously referred: "No doubt, if great care be exercised in selecting the subjects for inoculation, and if none but non-infected animals be inoculated, the contagium cannot be spread by them; but he is a bold man who would declare that, after he had exercised all his skill, he could not be mistaken, and that he had not inoculated any animal that had contracted the disease by the natural method. The man is not born who can discriminate with accuracy in this matter, and I repeat therein lies the, I might almost say, sole objection to the practice of inoculation for the eradication of Pleuro-pneumonia, and it is an objection which will never be got over, because it is but a limited extent of the chest of the cow which is open to percussion and auscultation."

A CASE OF ANTHRAX, AND A CASE OF—WHAT?

BY A. E. MACGILLIVRAY, BANFF, N.B.

About a fortnight ago I was called express one night, about six o'clock, to attend a horse which was extremely ill, at a farm some six miles out. I lost no time in being on the spot, but fully half an hour before my arrival the horse had expired.

I learned that the horse had been at work in the plough all the afternoon, and was unyoked when it began to get dark.

On arriving at home he commenced to go round and round, to lie down and get up, to breathe heavily, and was withal so very much distressed that I was sent for immediately. I saw him half an hour after death, and found him immensely distended with gas, rectum partially protruding, and blood oozing from same. On observing these symptoms, and considering the suddenness of the attack, and immediate fatality, I at once expressed the opinion that Anthracoid Apoplexy, located in the abdomen, was the cause of death.

Next morning I made a *post-mortem* examination, and found my previous night's *post-mortem* diagnosis correct. The usual well-known signs of Abdominal Anthrax I need not give in detail; suffice it to mention—what makes me chronicle the case—that the spleen had reached the enormous weight of twenty-three pounds! I suppose I am safe in saying that there never was such a spleen discovered *post-mortem* in any horse, the normal weight of the horse's

spleen being, according to Dr. Fleming's "Anatomy," thirty-two ounces, but here we had 368 ounces! So much for Splenic Apoplexy in the horse.

The other case to which I intend referring was equally unique. Some three weeks ago I was asked to go up to the public slaughter-house to examine the carcase of a three-year-old ox which had been killed the day before, up to which time he had been thoroughly healthy; in fact, he had never been ailing all his life. I found the carcase in prime fat condition, but all the inside walls of thorax and part of the abdomen were quite black, not merely dark-looking, but thoroughly black; in like condition was the inside of the trachea, larynx, nasal chambers, etc, and in great part the inside of the skin, etc., but really I need not further enumerate the various positions in which this inky blackness existed. The owner had caused the slaughterer to skin the inside of one side of the thorax, but the removal of the serous membrane made no difference to the blackness; it showed one thing, however, namely, that the blackness existed below the serous membrane, which latter was quite clear and normal.

Further examination with the knife and a strong object-glass, showed that this abnormal and extraordinary blackness was mostly confined to the subjacent areolar tissue in the various parts mentioned, as well as between the muscular folds in other parts of the carcase; in fact, wherever areolar tissue was present, the blackness generally showed itself, but was most conspicuous in the positions herein first detailed. Under a very strong object-glass this blackness, or abnormal deposit, or whatever else it might be, was easily seen to be made up of innumerable minute particles, so minute that to the naked eye only one black mass was presented. Of what this black deposit consisted, unless of the colouring matter of or from the blood, I am at a loss to say, or even imagine. I am equally unable to account for the occurrence of such an extensive and extraordinary deposit, or why it was confined to areolar tissue.

Notwithstanding this peculiarly restricted abnormality in colour, I passed the carcase as fit for human consumption, but not for exposure publicly for sale. In fact, with the exceptions mentioned, the beef was thoroughly sound and healthy.

OPERATION FOR THOROUGHPIN.

BY J. FLINTOFF, M.R.C.V.S. 5TH DRAGOON GUARDS.

DURING the last eighteen months, I have had a few opportunities of experimenting on horses with Thoroughpin (not associated with

Bog-spavin), with such satisfactory results that a description of the operation may be of interest to the veterinary profession.

After the patient has been cast and secured for operation, the method I have practised is as follows: to puncture the bursal enlargement at its most inferior point, by means of a slightly curved and pointed iron about a foot long, the part for insertion being a quarter of an inch in diameter. This is heated to white heat, and inserted into the sac till the opposite wall of the sac is reached, when the instrument is moved about so as to come into contact with as much of the secreting surface of the sac as is possible. This, of course, is done to destroy the secreting properties of the sac, and to produce sufficient inflammation to cause the walls to unite firmly together, and thus obliterate completely the previously existing bursal distension known as Thoroughpin. After the instrument is withdrawn, a small quantity of the spirits of turpentine is injected, which tends to produce a greater degree of inflammation than that produced by the hot iron alone, and further ensures the complete restoration of the parts to their normal condition. If the Thoroughpin exists on both sides of the hock, both sides are operated upon in the same way. This completes the operation.

I was induced to perform the operation above described, through seeing marks of the disease and treatment on horses in India that had suffered from Thoroughpin, one case in a well-known racing pony, and apparently with very good results.

I may state that the cases I have operated upon have been attended with complete success, with only slight traces of the operation, and thickening of the skin and subcutaneous structures remaining.

"PARTURIENT APOPLEXY IN COWS—A FORM OF SEPTICÆMIA."

BY JOHN BRETT, M.R.C.V.S., MANSFIELD WOODHOUSE, NOTTS.

HAVING read Mr. Harrison Thomas's contribution to the VETERINARY JOURNAL for January under the above heading, I ask for space to make a few criticisms on his observations.

After carefully considering the cases and the deductions drawn, I fail to see any addition to our knowledge of the pathology of Parturient Apoplexy; neither has Mr. Thomas made it clear that he understands the special characteristics of the disease he attempts to elucidate. From his remarks in the opening paragraph, he evidently looks upon it as a febrile disease. The symptoms given do not admit of that construction, but point in an opposite direction, and are clearly those of Parturient Apoplexy, which is of a non-febrile nature.

In the earliest stages of Parturient Apoplexy 103° F. is sometimes registered, but as that is met with under certain conditions in health, it cannot be looked upon as a "febrile condition." The surface temperature in the secondary stage appears to the hand to be somewhat elevated; but if taken carefully *per rectum*, no rise is indicated, the reverse more frequently being the case.

The term "Milk Fever" is made use of, and as that name is applied very loosely to several diseased conditions met with after parturition, I propose giving a definition of what is now understood as Parturient Apoplexy, and then trace the symptoms, course, and terminations of the disease, and compare them with the cases recorded, and point out the clinical differences to those met with in "Parturient Septicæmia." I use the latter term as more applicable to animals than "Puerperal Septicæmia."

Parturient Apoplexy may be defined as congestion of brain, spinal cord or their membranes, occurring at variable intervals after parturition, in some cases only a few hours, in others several days; developing suddenly with few premonitory signs, running a short course, and, in the large majority of instances, terminating fatally; rarely occurring before the third calf, and confined principally to those with deep milking qualities.

One of the earliest symptoms met with is in the mammary gland, in which the secretion of milk is suddenly arrested; accompanying this, or often preceding it, is inactive bowels, a flabby, flexible condition of the end of the tail—this latter is not mentioned, as far as I am aware, in books, but is always present some hours before a cow "goes down," and is very diagnostic. Next comes "paddling" with the hind feet, swaying to and fro, perhaps getting up and down several times in a few hours.

In fatal cases all the symptoms mentioned in Case I. rapidly follow. "Considerable headache" hardly conveys an idea of the "head symptoms;" "there was no real paralysis." Complete paralysis rarely, if ever, occurs, except as a sequel, and not usually before the fourth or fifth day, and even later. The brain then appears less implicated. The comatose condition soon passes off; probably the spinal cord is more affected, hence the paralysis, which is generally paraplegia of the hind limbs.

Case II.—The onset, though delayed some days, was sudden, the termination rapidly fatal. Some stress has been laid on the length of time after calving; this is not unusual, neither is it uncommon for cows to recover from a first attack and succumb to a second. This is put forward as evidence in favour of the theory of zymotic origin. But why should young animals be exempt, and older ones be more prone to attacks? Even good sanitation is no safeguard; as a rule, where animals are well fed, housed, and

cared for, there the disease is only too common; whilst under the very opposite conditions it is much less frequent. Would this be the case if it were of a septicæmic character?

Case III. varies very little from the first two, except in "sweating profusely." Now can a cow sweat? and has Mr. Thomas ever met with sudoriparous glands in the cow's skin? Dr. Burdon Sanderson lays great stress on the fact that there are none. "The swollen vulva and sanious discharge" might be caused through injury at the time of delivery.

Case IV. was an aged and evidently debilitated cow, with chronic organic disease of important organs.

Now, for comparison, take the septicæmic theory. Invasion from this cause rarely takes place so soon after parturition. Accepting for a moment that it is due to inoculation at the time of delivery, with a short and definite incubative period, the disease would be ushered in with rigors and all the accompaniments of high fever, capricious appetite, etc., etc., gradual, not sudden, arrest of milk secretion. Lameness of a metastatic character is sometimes a prominent symptom, with a recumbent position, but this could not be mistaken for the helpless condition always present in Parturient Apoplexy. The disease would run a longer course, with a greater interval between invasion and collapse and a lower death-rate. These remarks would apply whether the infection was specific or of a sapræmic character.

The fact "that some farms have perfect immunity from the disease, whilst others have a succession of cases," is entirely due to the age of the animals kept, and the management of them before and after calving, and not to any special sanitary regulations; "accumulations of filth," "insufficient ventilation, and pre-existing cases" are not factors in the production of it.

In making *post-mortem* examinations of animals, it is well to bear in mind the conditions under which they were placed during life, and the position after death, never losing sight of the fact that many of the subcutaneous injuries are self-inflicted during life or in the death-struggles. These are generally more extensive than those unaccustomed to make autopsies on animals would expect, and must be carefully differentiated from diseased lesions. Neither must hypostatic congestion be taken for areas of septic infection. Unless all these circumstances are fully considered, the after-death appearances are both deceptive and misleading.

The presence of the bacteria, taken in conjunction with the symptoms, do not even "render it highly probable that it was of bacterial origin;" but from the description, they are probably those met with in all animals a few hours after death.

Microscopic examination of tissues after death is undoubtedly

a great aid in tracing the etiology of disease; but unless this follows expert clinical observations, it is productive of much harm, and leads to erroneous deductions. This has been clearly proved in notable instances during the last year or two. The tendency of the age seems to be to describe some microbe met with after death, and point to this as the origin of the disease; often after limited clinical experience, confined in many instances to a single outbreak only, without even taking into consideration those factors within easy reach.

A VALUABLE HYBRID.

BY J. J. MEYRICK, C.B., INSPECTING VETERINARY SURGEON, A.V.D., DUBLIN.

I SHOULD like to draw the attention of the colonial readers of the VETERINARY JOURNAL to the following extracts from an article, upon the cross between domestic cattle and the bison of North America, which appeared in the New York paper *Forest and Stream*, of November 29th :—

"The fact that the hybrid is fertile renders possible the formation of a new breed, which would probably be well worth introducing to Australia and the Cape Colony, where bullocks are largely employed for draught purposes. The hardiness of the animal, the great value of its hide, and the usefulness of the fleece for making into cloth, would be additional claims in its favour in those districts where there is not much demand for milk. There is little doubt but that the hybrid would maintain its health both in South Africa and Australia, the climates being very similar in temperature and dryness to that of Texas, where the bison formerly roamed in millions."

Editorial.

THE PRODUCTION OF GENERAL ANÆSTHESIA IN THE HORSE.

In performing delicate or protracted operations of a painful kind upon horses, recourse to the production of general anæsthesia has not been so universal among veterinary surgeons as might be desired, both on their own account and that of the animals subjected to surgical measures. The chief reasons assigned for neglecting such beneficial means, have been the long time occupied in producing narcotism, the large amount of the expensive drug needed for this purpose, the danger attending administration, and the time that elapsed before the patient recovered completely from the effects of the anæsthetic. It has been laid down as a rule to be strictly observed, that unless the drug is administered with a due allowance of air, great risk is incurred, and death may speedily ensue. Consequently, the narcotising agent has only been introduced by one nostril, the other nostril being left free for the admission of air; the result has generally been a more or less prolonged delay, and the expenditure of a large quantity of chloroform or ether, before the horse was rendered insensible, the administrator being sometimes as likely to succumb to the anæsthetic as the patient.

Evidence of all this is afforded in the remarks made at the meeting of the Midland Counties Veterinary Association, as reported on page 49 of last month's Journal. The speaker who referred to the subject, certainly did make it appear that the production of anæsthesia by a mixture of chloroform and ether was a most serious affair. Not only did the horse, which was to be narcotised, require to be prepared during two days, in order to avoid the production of abdominal pains—due to paralysis of the nerve centres of the bowels—but there was danger of shock to the heart, total arrest of breathing, and even of paralysis of one of the fore-limbs; with stertorous breathing in horses affected with Roaring. The quantity of the drug or drugs—for the agent was a mixture of chloroform and ether—required, was not mentioned, except that for one case, in which it was as much as *thirty-six ounces!* Need we wonder that there occur heart shock, stertorous breathing, suspended respiration, post paralysis of limbs, and all the other alarming phenomena described?

The institution of operation for the removal of the immediate cause of Roaring in army horses at Woolwich, has demonstrated that there is no danger in administering chloroform to horses without their inspiring atmospheric air at the same time; that anæsthesia can be induced with perfect safety in so brief a period as one to two minutes; that the

quantity of chloroform need not be more than one and a half ounce for large and small horses; and that there are no after ill-effects.

By the use of the Carlisle bag or muzzle, the whole procedure of "chloroforming" is simplified and expedited to a wonderful degree, while the risks appear to be reduced to a minimum. The bag fits closely over the lower part of the head, and very little air can enter from its upper part. When the tray with the chloroform is introduced into the bottom of the bag, the horse immediately commences to inspire deeply, just as a person does in inhaling nitrous oxide, and, sometimes struggling a little, rapidly becomes unconscious. There is no stertorous breathing, not even in Roarers; nor have there been any signs of asphyxia or heart shock observable in the large number of Roarers operated upon (somewhere about seventy), and recovery has been rapid and favourable, without any bowel disturbance. The narcotic state may be prolonged indefinitely, with care, and with only trifling renewal of chloroform.

With this great improvement in the administration of the anæsthetic, there is now no reason why it should not be more frequently exhibited to horses about to undergo operation. No preliminary preparation seems to be required, beyond that necessary for ordinary casting; and the operator himself may administer the drug, thus dispensing with an assistant.

TUBERCULOSIS AND MILK.

ALTHOUGH in the light of recent researches into the baciliary nature and communicability of tubercle by direct experiment, says the *British Medical Journal*, the consumption of milk from tuberculous cows cannot but be looked on as fraught with danger, instances in which such a mode of communication can be absolutely demonstrated are, from the circumstances of the case, not frequently met with. The fact that even in advanced stages of the disease the bacilli are often not to be detected in the milk, the generally long incubation period, and the probability that the milk supply has been changed or the animals slaughtered before palpable mischief has been done, as well as the frequency of Tuberculosis in man arising from other causes, surround with almost insuperable difficulties all observations on the human subject. But an instance has lately come under our notice which admits of no doubt, and consequently deserves record. The owner of a valuable herd of cows, finding that a large proportion of them were tuberculous, so large a proportion, indeed, as strongly to suggest infection by association in the sheds, withdrew his milk from the market, and used it, unfortunately without boiling, for fattening his pigs, of which he has a large number, and on which he prides himself not less than on his cows. The result has been that the pigs have, almost without exception, been affected with the disease to an extent that has necessitated the slaughter of the whole stock. Another point of practical interest is that he has not been able to discover nodules or other indications of localised tubercle in the cows' udders, a condition still held by some to be necessary to render the milk capable of transmitting the disease. It is much to be regretted, too, that the legal definition of disease in the cow, as laid down in the Dairy and Cowshed Orders, does not include Tuberculosis, but is limited to Cattle-plague, Pleuro-pneumonia, and Foot-and-mouth disease. This definition should be made to include Tuberculosis and all eruptions of the udder.

"SURRA" IN ANNAM.

AT the meeting of the Central Veterinary Society of Paris in December, the report of a Commission appointed to examine a paper by Army Veterinary Surgeon Blanchard, "On a special disease affecting mules at Tonquin," was read and discussed. From M. Blanchard's description, there can be no doubt as to the disease which he had investigated, and which had caused the death of a number of artillery mules (imported from France, it is to be presumed) in Cochin China. The symptomatology, course, and necroscopical appearances are those of the malady now so well known to English Army veterinary surgeons by its destructiveness in India and Burma as "Surra," and Blanchard's discovery of the peculiar motile micro-organism which revels in the blood, and appears to attack the red corpuscles by preference, is confirmatory of identity. M. Blanchard examined the forage and water upon which the mules were fed, but could find nothing in the way of a clue to the source of these hæmatozoa; though he considered that bad and improper food, and exposure to fatigue and the weather, favoured their invasion and development in the body.

ACTINOMYCOSIS IN MANKIND.

WE were lately invited to the Brompton Hospital for Consumption and Diseases of the Chest, to see a case of Actinomycosis, the first observed in the living subject in this country. The patient was a boy about eleven years of age, son of a dairyman in the Midlands. Illness commenced about six months previously, and he was sent up to the hospital, where he was supposed, on admission, to be suffering from Empyema. The trocar being applied, however, no pus escaped, and soon after the lower part of the right side of the thorax began to bulge and consolidate. At our visit there was a large flattened discoloured tumour in this region, with numerous patches of ulceration from which a slight discharge escaped. This discharge, on being spread on thin cotton-wool and held up to the light, showed an abundance of small nodules; these contained the actinomyces. Near the spine, on the right side also, another tumour was in course of formation; its surface was about to undergo ulceration. The vertebræ in this situation were evidently involved in the morbid process, as the spine was distorted to some extent. The case was considered hopeless; indeed, the poor little boy was in a state of extreme marasmus and debility, and could not possibly live long.

ANTHRAX EXPERIMENTS IN NEW SOUTH WALES.

THE Board appointed on August 14th last to watch and report upon the experiments that have just been made at Old Junee, New South Wales, by the representatives of M. Pasteur, of Paris, in demonstrating the efficacy of M. Pasteur's vaccine of Anthrax as a preventive against Anthrax (Cumberland) disease in sheep and cattle, has been presented to the Government of that colony. It is as follows:—

We have the honour to submit our report upon the experiments recently carried out at Junee, by Dr. Germont and M. Loir, the representatives of M. Pasteur, for the purpose of demonstrating the efficacy of his vaccine of Anthrax as a preventive against Anthrax, *i.e.*, Cumberland disease, and we have to congratulate those gentlemen and the colony on the unqualified success of their demonstration.

During the early part of August last Mr. T. W. Hammond, of Junee, was asked if he would allow the experiments to be carried out on his run, when that gentleman at once placed some thirty acres of land adjoining the railway line, about a mile from Junee Junction, at the disposal of the Board.

The site was inspected and found in every way suitable, and the necessary fencing and buildings were erected under Mr. Devlin's supervision.

FIRST VACCINATION.

Dr. Germont submitted a programme of the proposed demonstration (similar to that by M. Pasteur at Pouilly-lé-fort in 1881), which was approved by the Board, who proceeded to Junee on September 3 to witness the first vaccination. In order to ensure that none of the stock were infected with the disease, thirty-nine sheep and six head of cattle had previously been purchased at Cootamundra, an uninfected district, and of these twenty sheep and four cattle were vaccinated by Dr. Germont, assisted by M. Loir, on September 4th, under the supervision of the Board.

The sheep were vaccinated on the inner side of the off thigh by the hypodermic injection of one-eighth part of a cubic centimetre (about two minims) of attenuated virus of Anthrax—"first vaccine of Pasteur." The cattle were similarly operated on behind the shoulder, each receiving one-fourth part of a cubic centimetre, *i.e.*, four minims, of first vaccine. The temperature of each animal treated was taken immediately afterwards, the normal temperature being, sheep, 103° to 104°; cattle, 101° to 102°. It was also taken on the 5th, when a general rise of the temperature of the sheep was discerned, and in the case of one of the sheep had risen to 106·2°. On the following day the temperature had in most cases slightly fallen. This was also the case in regard to the sheep whose temperature had reached 106°. Another had gone up to 106°, but was on the following day found to have gone down to 102·3°. The sheep between this and the second vaccination continued to be closely watched, but exhibited no symptoms of being affected by the operation.

SECOND VACCINATION.

The members of the Board (with the exception of Mr. Lamb, who was unavoidably absent) attended at Junee on September 18th to watch the second vaccination, when Dr. Germont and M. Loir re-vaccinated the twenty sheep and four cattle, this time with the same quantity of Pasteur's second vaccine of Anthrax. The temperature of the animals was taken immediately afterwards, when it was found that it corresponded with that of the previous vaccination. On the following day a considerable rise of temperature was noticeable in those sheep which had shown no rise after the first vaccination, some of them going as high as 107°. On the following day there was a considerable fall in nearly all the sheep except one, which registered 105·2°. The vaccinated and unvaccinated animals were allowed to run together, but no ill effects were noticed.

On September 18th Dr. Germont also inoculated two sheep, in the presence of the Board, with a cultivation of the virulent virus of Anthrax (Cumberland) disease. This virus had been originally procured by the Government veterinarian (Mr. Stanley), in May last, from Mr. A. A. Devlin's sheep at Uarah, and was handed by him to the Government Analyst (Mr. Hamlet) on September 13th for this inoculation, the object being to test its efficacy and, if still effective, to obtain a supply of fresh virulent virus for the demonstration. As showing that the virus had lost none of its vitality, the two inoculated sheep died at 8 p.m. on the following day, being thirty-two hours after inoculation. Careful post-mortem examination of these sheep by Mr. Stanley and Mr. Devlin, in the presence of Mr. Hamlet and Dr. Germont, showed unmistakable indication of the disease Anthrax, and the microscope revealed its characteristic bacilli. Blood was taken by Mr. Hamlet from one of these sheep for the purpose of preparing a cultivation for the final test, and the cultivation was carried out in his laboratory in Sydney, under his supervision, by M. Loir.

INOCULATION OF SHEEP WITH VIRULENT VIRUS FOR DEMONSTRATION.

The cultivation prepared under Mr. Hamlet's supervision was taken on September 29th to Junee Junction, and on the 30th three sheep were inoculated with different quantities of this cultivation by Dr. Germont, in the presence of Mr. Devlin and Mr. Bruce, at the experimental station, with the view to have the deaths occurring at different times for the purpose of the demonstration. Of these, the first sheep died at 6 a.m. on October 2nd, thirty-four hours after the inoculation; the second at 3.30 p.m. of the same day, forty-three and a half hours after inoculation; and the third sheep at 9 a.m. of the 3rd, fifty-nine hours after inoculation.

FINAL EXPERIMENTS AND DEMONSTRATION.

All the members of the Board attended at Junee on Tuesday, the 2nd October, together with Dr. Thompson, of the Board of Health, the Chief Inspectors of Stock for Victoria, Queensland, and Tasmania, and the Government Veterinarians for Victoria and Tasmania. There were also present a considerable number of delegates from the Pasture and Stock Protection Boards, and a good many inspectors of stock and visitors from different parts of the colony, in all about 200 people. At 3.30 p.m. one of the sheep inoculated on September 30th died, as anticipated. After *post-mortem* examination and inspection of the blood under the microscope, and the Board being satisfied as to the cause of death, Dr. Germont and M. Loir commenced at 4.45 p.m. the inoculation of the thirty-nine sheep with the blood of this sheep, doing the vaccinated and unvaccinated sheep alternately, using the same syringe and the same quantity of blood for each, viz., one-eighth part of a cubic centimetre, equal to two minims. The six head of cattle were also inoculated with blood from the same sheep and with the same syringe, receiving one-fourth part of a cubic centimetre. The whole of the sheep, both vaccinated and unvaccinated, were then placed in the same enclosure, fed upon the same food, and drank from the same trough. Green food was scattered about the floor upon which the unvaccinated sheep were dying, and sanious discharges contaminated the food. The vaccinated sheep, in addition to the inoculation, also had to undergo the risk of contracting the disease by taking up the blood or other excreta from the unvaccinated sheep which died in the same pen where they were confined and fed for four days after the inoculation took place.

The first of the nineteen unvaccinated sheep succumbed to the disease at 8.15 p.m. on 3rd October, being about twenty-seven hours after inoculation, and the last of that number died at 5.30 a.m. on Friday, 5th October, sixty hours fifteen minutes after inoculation. Of the two unvaccinated cattle (Nos. 88 and 33), the former died at 10.30 p.m. on Saturday, 6th October, while the latter, though having been very ill, is likely to recover. Mr. Stanley made a *post-mortem* examination of all the sheep that died, and found the lesions of Anthrax very decidedly indicated in every instance. The diagnostic changes were the black, semi-fluid blood, the enlarged, softened, blackened spleen, and the dark, bloody colour of the urine. These conditions were well marked in each case. During the examination the changes produced by the disease, such as the blood-stains, patches of inflammation in various parts of the body, the gelatinous, bloody effusion at the point of inoculation, and other points of interest were explained to the visitors. A healthy sheep was killed for the purpose of comparison of the organs with those of a diseased sheep; the blood of the same was examined and exhibited.

In order to remove any possibility of doubt as to the cause of death, the Board requested Mr. Hamlet (Government analyst) to examine the blood of the sheep as the *post-mortem* examinations were made, and in every case the

blood, when submitted to that test under the microscope, contained *Bacilli anthracis.*

At the request of one of the visitors present (Mr. R. G. Higgins) a sheep which had been protected by vaccination, and afterwards inoculated on September 12th, was killed, but did not show any trace whatever of the disease, neither was there any effect upon the wool. This was eighteen days after inoculation. Some additional experiments are being made by the Board, to ascertain, if possible, why travelling sheep are more subject to the disease, and if there is any difference in the *post-mortem* appearances of inoculated and naturally infected sheep; but as sufficient time has not yet elapsed, it is premature to offer an opinion thereon. The results will form the subject of an additional report.

OPINION OF THE BOARD.

After carefully watching the whole series of experiments, and giving the subject the fullest consideration, the Board are unanimously of opinion that Dr. Germont and M. Loir have conclusively demonstrated the efficacy of M. Pasteur's "vaccine of Anthrax" as a preventive against that disease, and therefore recommended its adoption and use. In conclusion, the Board desire to express its appreciation of the untiring efforts of Dr. Germont and M. Loir, by whom the late demonstration was made most interesting and instructive to the large number of gentlemen attending. The Board also wishes to express its appreciation of the able and efficient manner in which the duties of secretary have been discharged by Mr. E. C. Weller.

J. DE V. LAMB, *Chairman.*
WILLIAM M. HAMLET.
ALEX. BRUCE.
EDWARD STANLEY, F.R.C.V.S.
ARTHUR A. DEVLIN.

ANTHRAX IN SHEEP.

IN the Legislative Council of the Parliament of New South Wales, on November 7th, Mr. Stewart asked the Attorney-General: "1. Is it true that Government is in any way committed to the approval of M. Pasteur's vaccine against Anthrax in sheep? 2. If so, has Government taken any security that losses from Anthrax after vaccination shall be made good? 3. Have the veterinary colleges or schools in England, Scotland, Canada, the United States, France, Germany, or Italy adopted or recommended the employment of M. Pasteur's vaccine?"

Mr. Simpson replied, "The demonstration given by M. Pasteur's representatives having proved thoroughly satisfactory, some of the owners of infested country who are desirous of protecting their sheep before the dangerous season sets in have asked the Government to make an arrangement for them with Pasteur's representatives for the vaccination of their sheep. As this would be an extended and confirmatory experiment, the Government are endeavouring to facilitate the proposed arrangement, but have themselves as yet made no agreement with M. Pasteur. 2. It will be seen from the preceding answer that this is not a Government matter, but that the owners who wish to make the arrangement are prepared, after what they have heard of the success of the vaccination in France and elsewhere, supported as this has been by the Junee demonstration, to give the operation a trial without guarantee. 3. I am not in a position to say whether the veterinary colleges and schools in the countries named in the question have adopted or recommended the employment of M. Pasteur's vaccine; but the editors of the

leading veterinary journals of Great Britain—the *Veterianarian* and the VETERINARY JOURNAL, London—have both acknowledged the efficacy of Pasteur's vaccine of Anthrax, and approved of its use. As bearing on this part of the subject, I would add that the Government of India has concluded an arrangement with M. Pasteur for the supply and use of his vaccine on exactly the same terms as those offered to this colony, that its use in France is every year on the increase, and that it is now used in Belgium, Germany, Austria, Brazil, and the Argentine Republic."

TUBERCULOSIS IN THE UNITED STATES.

PROFESSOR LAW, F.R.C.V.S., Cornell University, has been applying himself for some time to the question of Tuberculosis in the United States of America. In the course of an interview published by the *New York Herald*, he said, "The public have no idea of the overwhelming importance of the subject. A case of Yellow Fever or Smallpox occurs, and instantly there is a call for seclusion, quarantine, and all possible sanitary safeguards, while in every street, in every tenement house, and in nearly every stable we find the victims of this contagion, which is slaying our population by the tens and hundreds of thousands yearly. In cattle I have seen the introduction of a tuberculous animal infect a whole herd of sixty head in a few years. The many and varied experiments of Gerlach and others showing the communication of the disease from animal to animal by the use of the diseased meat and milk, the direct experiments of Villimin and his followers in the production of the disease by inoculation, and the culture experiments of Koch and his successors, in which the bacillus was grown on pieces of bread, potato, etc., and transferred from these to the animal system, leave nothing to be desired in the way of proof. I have on more than one occasion found a tuberculous family in Brooklyn living largely on the milk of their tuberculous cow. In another case an invalid lady began to improve and gain in strength when she gave up using the milk of a tuberculous cow; and perhaps the most striking case in my experience was that in a large public institution, where more than half the dairy cows were tuberculous, a much larger proportion of the human inmates were found to be the victims of this disease than in any similar institution elsewhere." The cow has certainly an unenviable reputation in Tuberculosis. It prevails largely in countries where cattle are abundant—in all the agricultural countries of Central and Southern Europe, in Algiers, Australia, Tasmania, New Zealand, the United States, Canada, and the Pampas; whereas it is comparatively rare in the New Hebrides, Iceland, and the northern parts of Norway, Sweden, Lapland, and Finland. Dairy cows are usually fed in a manner to elicit the largest possible yield of milk, and this with little consideration as to whether such diet is fully adapted to nourish and invigorate the system. Moreover, they are called upon to maintain this milk yield as long as possible, without the consideration that they are at the same time carrying a calf, and under this double drain the system is undermined, and it becomes an easy prey to the tubercle bacillus. The temperature of the cow is *par excellence* the temperature which is favourable to the growth and propagation of the bacillus—102 degrees Fahrenheit, or a little over, internally. Other things being equal, therefore, the temperature of the cow renders the system more favourable to the growth of this disease-germ than does that of man, 98·5 deg.; of the horse, 99·5 deg.; or of the dog, 99·5 deg. In view of the daily danger thus involved in drinking milk, Professor Law was asked how he proposed to minimise it. He replied, "There must be inspection of the dairy herds furnishing it. A microscopical or chemical analysis of the milk is not enough, as the bacillus is found only with the

greatest difficulty in this fluid, and the infection of a dyspeptic child may attest its presence when thousands of microscopic tests of the same class have been made in vain. Milk brought from a greater distance, and which has passed through the process of boiling or condensation, is practically safe, as the germ is destroyed by the heat. It is the fresh milk, and above all the warm milk, that is dangerous. From a herd of cattle, any of which has a cough, a nasal discharge, or an enlarged gland, a little of the product may be taken for microscopic examination, and the status of such herd or animal may be determined by the result. From the attendants on such a herd any one with a cough or expectoration may be tested in the same way; and if the bacillus is found, prudence would suggest that he be removed from a position which makes him a source of danger to the community. To protect the milk consumers it is essential to expel all but sound cows and sound attendants."

THE NEW FIRE-ARMS IN RELATION TO VETERINARY SURGERY.

(*Continued from vol. xxvii., p.* 425.)

RUBINI RIFLE.—Distance, 100 yards.

FIRST CARCASS OF HORSE.

1st Shot (from the Front—Arm-bone).—Orifice circular, immediately opposite the shoulder-joint. From the orifice there was escape of joint-oil. Bullet entered on inner side of insertion of tendon of flexor brachii, striking the neck and body of the arm-bone (humerus), pulverising that portion. There was no splitting or fissuring into the articular (joint) surfaces. The muscular tissue surrounding the fracture was disintegrated, filled with bone *débris*, and fragments of lead and copper. After passing through the humerus, the projectile went through the triceps (large muscle behind shoulder-blade), disorganising the muscular tissue, and came out six inches above the elbow.

2nd Shot (from the Front—Chest).—Bullet entered the centre of the chest between the two first ribs, just above the cartilage of the sternum, penetrating the anterior lobe of right lung, passing into right auricle of the heart, making a rent of 2½ inches in diameter through the right ventricle, lacerating the partition between the two ventricles (septum ventriculorum), passing out at the apex of the left ventricle through a hole 1½ inches in diameter, lacerating the heart sac (pericardium), passing through base of the diaphragm, penetrating in three places the large intestine (transverse colon), going through the abdominal walls, and lodging above straight abdominal muscle (rectus abdominus), one foot in front of the umbilicus. Chest full of blood, in which was found a quantity of food from the intestine. Copper covering not removed from the bullet.

Hind Leg Shot.—The bullet penetrated the anterior part of middle third of leg, pulverising the leg bone above hock (tibia), and passing out at the back of the limb. Portions of copper and lead found in the wound. The fracture did not extend into the joint (articular) surfaces; but it was observed, both in this and other wounds, that there were extensive sub-periosteal fractures of bone which would have rendered an accurate diagnosis very difficult.

3rd Shot (from the Front—Knee).—Bullet penetrated upper joint of knee, smashing the inferior extremity of the fore-arm bone, and pulverising its compact tissue, so much so that in opening the knee-joint, which was full of blood, a racket-ball could easily have been placed in the cavity formed by the bullet. The upper row of knee bones was smashed, and the bullet had passed out behind.

4th Shot (Flanking Shot—Thigh).—The upper part of thigh bone femur

(trochantor major) lying in fragments; head of femur completely separated. Upper third of the femur had practically disappeared, and all that represented it was a considerable quantity of bone fragments and bone *débris* driven into the muscular tissue which had surrounded the bone. The smashing up effect was almost beyond description.

5th Shot (from the Front—Foot).—The bullet entered an inch below the coronet, through an opening over which the horn fibres had so arranged themselves that it was quite impossible to believe that a bullet had penetrated the foot. *This is a point of clinical importance.* In the inner surface of the wall of the hoof the bullet wound was quite perceptible, and in the sensitive laminæ it was large enough for the index finger to be introduced. In laying open the joint, the foot (pedal or coffin) bone was found in fragments, or rather pulverised, and the navicular bone was fractured in three places. The bullet had passed through the perforans tendon, and made its exit through cleft of frog.

Miss Shot for Arm-bone.—Missed the arm-bone (humerus), but entered the chest two inches on inner side of shoulder-joint, where the muscular tissue of the large extensor muscle of arm (flexor brachii) commences. The bullet passed underneath the axillary artery and vein without injuring either, downwards and backwards into the great chest (pectoral) muscles, from the posterior part of which it was extracted. Along the track of the bullet there was complete muscular disintegration. Penetration from point of entry, 19 inches. Bullet smashed, and portions of copper covering left in the wound.

Distance, 50 yards.

SECOND CARCASS OF HORSE.

6th Shot (Flanking—Neck).—The bullet entered the left side of the neck, pulverising the fifth cervical vertebra, dividing the spinal cord, and passing out at the opposite side of the neck.

7th Shot (Flanking Shot—Shoulder).—The bullet entered about the centre and behind the spine of the shoulder-blade, passing through, drilling a clean hole at the point of entry, slightly fissuring the bone at exit. Thence it passed into the body of the first dorsal vertebra, pulverising the bone and fracturing the superior spinous process. The spinal cord was completely divided and the bullet smashed up.

Miss Flanking Shot for Shoulder.—The bullet penetrated the large (triceps) muscle posterior to the shoulder-joint, fracturing the second rib, penetrating the lung, and dividing the vessels in front of the heart, filling the chest with blood. Portions of the copper covering of the bullet were found in the wound. Bullet not found.

8th Shot (Flanking Shot—Shoulder).—Bullet entered 2 inches above the elbow-joint, completely smashing the arm-bone (humerus) and lodging in the front cartilage (cariniform) of the sternum, against which a quantity of the copper covering of the bullet was found.

9th Shot (Hind-quarter).—The bullet went right through the muscle of the croup, passing underneath the sacrum. Aperture of exit about 1 inch in length; muscles considerably pulped.

ENFIELD-MARTINI RIFLE.—Distance, 100 yards.

FIRST CARCASS OF HORSE.

10th Shot (from the Front—Arm-bone).—Struck the off-shoulder. This shot passed through the powerful tendon of the flexor brachii muscle, then struck the head of the humerus (arm-bone), completely smashing it, and also comminuting the shaft longitudinally. It afterwards traversed the large

mass of muscle behind the above-named bone (called the triceps), and passed out. It re-entered the skin of the chest about 8 inches farther on, near the "spur-vein," travelled under the skin for 10 inches, and lodged. The bullet was cut out, and was found to be somewhat "mushroomed," but otherwise unbroken.

11*th Shot (from the Front—Chest).*—Struck the chest slightly to the left of the median line, cut through the large axillary artery, entered the right auricle of the heart, passed through the septum, and escaped through the left ventricle, tearing the muscular wall considerably. The orifices of entry and exit of the cardiac wounds were about an inch and a half to 2 inches in diameter. The bullet then pierced the diaphragm (midriff) and wounded the large intestines eight times, owing to the curvatures of the bowels. Careful search for the bullet was fruitless.

12*th Shot (from the Front—Knee).*—Struck the radius (forearm-bone) 2 in. above the left knee, completely smashing it for some distance longitudinally, as well as pulverising the bone in the neighbourhood of the point of impact. The fracture extended to the knee-joint, but the small bones were uninjured. The bullet passed out, and no lead was found in the wound.

13*th Shot (from the Front—Foot).*—Struck the hoof three-quarters of an inch below the coronet, making a clean and well-defined hole through the horn, pulverised the pedal bone, smashed the navicular bone, split the small pastern bone (os coronæ). It then passed through the flexor tendon and gained exit through the "frog."

14*th Shot (Flanking Shot—Thigh).*—Struck the left femur (thigh-bone) about one-third from the upper end, having first, of course, passed through the covering muscles, making a clean tunnel through them. The bone was considerably pulverised and comminuted, and the bullet was found flattened and lying amongst the *débris*. The shaft of the bone was utterly broken up, as above described.

Distance, 50 yards.

SECOND CARCASS.

15*th Shot (Flanking Shot—Neck).*—Struck the neck, passed clean through the muscular structures just above the vertebræ, missing these, and out. The wound was a clean-cut tunnel. The orifices of the entrance and exit were small.

16*th Shot (Flanking Shot—Shoulder).*—Struck the back of the left scapula (shoulder-blade) at its posterior edge, about three inches from the top, carrying away about half an inch of it; then struck the ninth rib, fracturing it; pierced the anterior lobes of the lungs and both auricles of the heart. These heart wounds were of a frightful description, and were probably largely due to splinters of bone from the ribs. The greater part of the outer walls of the auricles was destroyed. A large fragment of the bullet was cut out from under the skin of the off side.

17*th Shot (Flanking Shot—Shoulder).*—Struck the middle of the humerus (shoulder-bone); pulverised and comminuted it badly; passed through the anterior chest (pectoral) muscles and flexor brachii on the off side, just above and in front of the elbow joint, and out.

18*th Shot (Hind-quarter).*—Struck the upper part of the quarter on the off side, traversed the large and bulky muscles in the region of the croup, making a clean passage about three-quarters of an inch in diameter; struck the sacrum (a part of the bony spine), pulverising it for a diameter of three inches, and traversing the muscles on the other side, gained exit.

Sir Thomas Longmore, Professor of Surgery at the Medical School, Netley also attended the experiments by direction, and furnished the following, notes:—

The bullets employed in the experiments were of two kinds—(1) the Enfield-Martini, or, as I heard it sometimes called, the Metford bullet, the diameter of which was $\frac{4}{10}$ of an inch (0·402 inch); and (2) a Swiss bullet, the Rubini bullet, having a diameter of a little under $\frac{3}{10}$ of an inch (0·298 inch). The Enfield-Martini is a solid bullet, and, I believe, of hardened lead, with a slight concavity at the base, is $1\frac{1}{4}$ inch long, and weighs 384 grains; the Rubini, a solid leaden bullet, also, I understand, hardened with a proportion of tin, is covered by copper sheathing, has a deeper concavity at the base than the Enfield-Martini, is $1\frac{1}{8}$ of an inch long, and weighs 217 grains. The copper sheath, though in close contact with the leaden core of the bullet, is not united to it, so that in instances in which the bullet was broken up by collision with bone, portions of the copper were found in detached fragments varying in size, and more or less coiled and distorted. The Enfield-Martini projectile was fired with a charge eighty-five grains of service black powder; the Rubini with a charge of seventy grains of compressed meal powder. The former started with an initial velocity of 1,570 foot-seconds; the latter with an initial velocity of 1,851 foot-seconds. The distances from which the shots were discharged at the carcases of the horses, who had been killed shortly before the experiments were instituted, were 200 and 100 yards.

With regard to the general results of the shots, it did not appear to me that there was any noticeable difference between those which were effected by bullets fired at 200 yards, and those at 100 yards, and as in air the Enfield-Martini bullet would travel over a distance of 523 yards and the Rubini over 600 yards, in the first second of time of its flight, there could be scarcely any appreciable difference in the rates of velocity possessed by the projectiles at the time of striking the carcases, whether they were fired from either one or other of the two distances named.

From what I have read in published reports of the effects of the Lorenz narrow steel-plated bullets in Germany, I anticipated that the narrow Rubini bullet, on being brought into collision with bone, would effect a clean perforation through it, without causing much surrounding damage; but, contrary to this anticipation, I witnessed an amount of local destruction and extensive injury done by it on the horse bones and neighbouring structures, such as I have never seen done in the human body by rifle projectiles, even in experiments on cadavers at short ranges. In one instance, when the thickest part of the thigh-bone had been aimed at and struck by the Rubini bullet, the trochanteric region, a pit was left in the bone about the size of the hollow of my hand, in which the osseous structure was ground up as if it had been pounded in a mortar, while all round the bone was broken into countless fragments, the articulating head, although not directly struck by the bullet, being completely rent into separate parts within the acetabulum. I did not detect the same extent of fissuring prolonged from the site of impact of the projectile, along the shafts of the bones fractured by them, that I have frequently seen effected by cylindro-conoidal bullets of greater diameter, but, owing to the thickness of the periosteum covering the bones, such fissures may have existed, though only capable of being recognised after maceration and more deliberate inspection.

The only instance in which I saw a clear hole made by either of the two kinds of bullet, was one in which there was a perforation of the comparatively thin supraspinous portion of the scapula by a Rubini bullet. In this example a piece of bone of about the same diameter as the bullet was, as it were, punched out, there not being any surrounding splintering. But after passing through the scapula, the bullet had smashed up a rib beneath, had literally pulverized the body of the second dorsal vertebra, and had done extensive damage to the viscera within the chest.

One special purpose of the experiments was to ascertain from them how far

wounds inflicted by very narrow bullets would be likely to have a stopping effect on horses, on a charge of cavalry, for example. The horse does not appear to suffer from shock or from mental disturbance when wounded, so that hardly any comparison can be made between the influence of gunshot wounds in this animal and in a soldier, even though the wounds may apparently correspond in extent and gravity, so far as material conditions are concerned. As a considerable number of distinguished officers of the Veterinary Department took part in the experiments, their report will no doubt enable a conclusion to be come to on the stopping effect on horses of such wounds as we saw caused by the two bullets, so far as it is practicable to form one from observations on the animals after death.

As to the probable surgical consequences that would ensue from the introduction into warfare of such a narrow projectile as the Rubini bullet, it seems to me only a reasonable inference, from the characters of the wounds on the horse carcases that I had the opportunity of examining, and taking into consideration the extremely high rate of initial velocity impressed on the projectile, the limited amount of resistance, owing to its shape and dimensions, that it would meet with from the air during its flight, and, consequently, the very long range over which it would retain penetrative and destructive power in regard to the human body, that there is no ground for imagining either that the number of wounds inflicted in warfare and requiring surgical treatment would be lessened, or that on the whole the wounds would be likely to be less severe in their nature than those which surgeons have been accustomed to from the heavier and larger bullets that have been hitherto in use; presuming, of course, that the narrow bullets so introduced possessed all the qualities which distinguish the Rubini projectiles. In particular cases, especially when the speed of such a bullet had been partly expended, the narrowness of a projectile like the Rubini projectile would enable it to pass through parts of the human body, without inflicting damage on immediately adjoining and important structures that could not escape from broader bullets; but this surgical advantage would, I fear, be quite counterbalanced by the increased penetrative power, and therefore probably increased number of wounds inflicted, as well as by the greater injury done in those wounds which would be inflicted by the projectile, particularly when a bone happened to be struck, at relatively short ranges, while it was still armed with its higher rates of velocity.

It might be interesting to have similar observations made with bullets possessing the characteristics of the Rubini bullet, but fired with reduced charges, so that at the time of inflicting the injuries they might more closely resemble in their conditions those which would exist after they had traversed ranges of 600 or 700 yards, or other distances at which wounds would be likely to be chiefly inflicted in actual warfare. If, however, the experiments, are made, as those which I witnessed were, on the carcases of horses, it must, I imagine, always remain a matter of some doubt how much the greater resistance which is offered by the massive bones of the horse to the projectile, acts in modifying the characters of the injury effected, as compared with the results that would ensue, supposing the resistance to be reduced to what it would be in corresponding bones of the human body.

PROSECUTIONS BY THE ROYAL COLLEGE OF VETERINARY SURGEONS, UNDER THE VETERINARY SURGEONS ACT.

REDDITCH PETTY SESSIONS.—19th December, 1888. Before R. S. Bartlett, W. H. S. Rynnersley, and W. Avery, Esqs.—Walter Wiggilsworth was charged with having on the 16th November, at Redditch, practised as a veterinary surgeon without being entitled to do so. Defendant asked for an adjourn-

ment in order that he might procure legal advice and witnesses. He stated that he only received the summons on Monday afternoon, and on Tuesday went to see a gentleman at Stratford in connection with the matter. Mr. F. Lawson Lewis, solicitor, instructed by Mr. Thatcher, solicitor, on behalf of the Royal College of Veterinary Surgeons, objected to the adjournment, and said he was prepared to go on with the case. Defendant said he had spent £650 on his education as a veterinary surgeon, and under the old rules he was entitled to use the title of veterinary surgeon. Mr. Lewis said there was only one possible defence, and that was that Defendant's name appeared in the register; if it were not there a conviction must follow. He further said that persons who had practised for a certain time before 1881 were allowed twelve months to get their names on the register, on application to the Royal College of Veterinary Surgeons. It appeared that Defendant had omitted to comply with the regulation, and the Bench fined him £1 and 14s. 6d. costs, together with the solicitors' fees, amounting to £2 15s. 6d. in all. He was allowed a fortnight to pay, and in default to be imprisoned for one month with hard labour.

THAMES POLICE COURT.—28th December, 1888. Before Mr. Lushington.—Mr. W. Chiswell, trading under the style of Chiswell and Co., of 123, New Road, Whitechapel, was summoned "for that he being a person other than a person who, for the time being, was on the register of veterinary surgeons, or at the time of the passing of the Veterinary Surgeons Act, held a veterinary certificate of the Highland and Agricultural Society of Scotland, did take or use the title of veterinary surgeon." Mr. Colam, barrister, instructed by Mr. Thatcher, solicitor to the Royal College of Veterinary Surgeons, prosecuted. Charles Davis, clerk to the solicitor of the Royal College of Veterinary Surgeons, produced the registers, and deposed that Defendant's name did not appear in either of them. He had seen the board outside Defendant's place, on which was "Chiswell & Co., M.R.C.V.S. Horses attended to." Defendant had been previously cautioned. Defendant, in answer to the charge, said he had been in practice in London for the last thirty years, and could undertake anything in connection with a horse with any one belonging to the College of Veterinary Surgeons. He had a partner, a Mr. Sangster, who was a fully qualified man. Mr. Lushington said Defendant in 1881 might have put himself on the register, but did not choose to do so. It was clear his board led the public to believe he was a veterinary surgeon. Such a practice must be stopped. He would be fined £10 and £3 3s. costs. The fine not being paid, Defendant was committed to Holloway prison for twenty-one days.

"SANITAS."

WE have lately had an opportunity of testing the deodorising and disinfecting properties of the substance prepared from turpentine, known as "Sanitas," and have been much impressed with its valuable properties, which would appear to entitle it to a high, if not the highest, place among articles of this class. For veterinary purposes it possesses great advantages, especially in surgery, and as a parasiticide, an antiseptic, a disinfectant, and a purifier of stables, cow-sheds, and dog kennels, as it is easily applied and is absolutely safe, while its odour is far from unpleasant. In the form of powder, sawdust, emulsion, fluid, soap, jelly, or ointment, it meets all requirements, and the Sanitas Antiseptic Gauze is a most useful dressing—supplemental, if need be—for wounds.

The new bactericides of Mr. Kingzett, also prepared by the Sanitas Co., promise to be of great service in destroying all toxic products by oxidation, they being also destructive of micro-organic life, germs, and spores; they

retain these properties even when in contact with mucous membranes and other tissues, as they do not, like many other articles of this kind, coagulate albumen. The mercuric bactericide contains as active principles five per cent. of mercuric chloride (corrosive sublimate), and five volumes of peroxide of hydrogen, combined in such a form that the solution keeps permanently free from precipitation, and without loss of strength. It should be of immense utility during the performance of operations, and in dressing wounds and unhealthy surfaces or cavities.

IN VINDICATION.

RECOGNISING the truth of the axiom that there is a time for silence and a time for speech, I have not hitherto intruded my personality on the readers of the Journal with the object of defending myself from the disgraceful attacks made upon me by two or three individuals, in professional and other periodicals, in relation to the subject of operation for Roaring. To mention their names would be to name their motives—detraction and defamation. It is a remarkable circumstance that laryngeal surgery, human and animal, should excite such discreditable feelings, such degrading exhibitions, as we have had in London and Berlin; and if in our own profession the rancour, untruthfulness, and bad taste have all been one side, it was only because the other side treated the utterances of these individuals with the contempt they so richly merited. Perhaps this was not the most judicious course to have taken, as silence may have implied assent to the unfounded statements, and it might have appeared more effective to have shown up the tactics of the unscrupulous and vindictive—to have figuratively "nailed the lies to the counter," as shopkeepers used to do with base shillings, sham half-crowns, or bad dollars.

But I considered I was best consulting my own dignity and that of the profession, by preserving silence; and if I break this now, it is because I feel that my motive in refraining from vindication might be construed as due to pusillanimity, and so create a notion that such attacks might be indulged in with impunity, or that the unfounded statements might have some truth in them. That I am right in this surmise may be inferred from the remarks made by Mr. Jones, of Leicester, at the meeting of the Midland Counties Association, on "The Cure of Roaring," as reported at page 49 of last month's Journal. When misrepresentation extends from the London clique to the provinces, and is introduced at a large gathering of members whom I hold in much esteem, I think it is high time, for our collective credit, to venture on vindication. Within a very brief period—a few months—Mr. Jones appears to have acquired an immense amount of information on everything connected with the subject he introduced; and in regard to this, I should be inclined to felicitate him exceedingly for his commendable energy in procuring knowledge, even at second or third hand, had he refrained from introducing personalities. He was not ashamed to charge me with "an attempt to obtain credit under false pretences," and he gave second-hand evidence to prove his statement. So far as this country is concerned, he adduces Gamgee as having opened the horse's larynx some years ago, and Messrs. Horsley and Clarke in 1887. I have carefully examined English veterinary and kindred literature up to the end of 1887, and I challenge Mr. Jones, or any one else, to give me evidence therein that the horse's larynx was ever opened for intra-laryngeal operation in this country, previous to my attempts. Of course, it was inevitable that Gamgee's name should be introduced, and I do not deny that he may have performed such an operation as the above; but I can find no record of it anywhere, and therefore I cannot be charged with knowingly borrowing from him. Mr. Dollar (distinguished from another of the

same name by the initials J. A. W.), in two publications, asserts that Mr. Gamgee operated in 1886-87, a period sufficiently near as to be within the memory of most men; and yet I can obtain no information confirmatory of the statement; everything would go to show that if the distinguished professor were operating at all in these years, it was not upon horses. But Mr. Dollar in this matter evidently values fiction far beyond fact, and therefore it is that in his effusions we find, in the words of the satirist, "a lie in nearly every line." Clarke's *experiments* date no farther back, according to his own statement, than the middle of 1887, and nothing was published concerning them until the middle of 1888, when a description of them appeared in a *naval and military* periodical! Mr. Jones then goes to the Continent, and, *mirabile dictu!* refers to a work published in Germany in 1888 as evidence that I borrowed my ideas also from foreign veterinarians. It does not appear, however, that Mr. Jones could have read, perhaps he has not even seen, this work, or he would surely never have misled the meeting by inferring that I had been influenced by it in this business. If he had seen the book, then he ought in fairness to have stated that it was published last July (the author dates his preface in June). Professor Möller kindly sent me a copy immediately after publication, and I received it at the commencement of August. I had previously heard that he was attempting the cure of Roaring by lateral operation, and this is mentioned in Mr. Smith's article on the subject in the July number of the Journal. So much for the reference to Möller, from which the other information Mr. Jones laid before the meeting is derived, though it is incorrect. No one in France has ever operated or described an operation for Roaring, and no one of the name of Gouband has ever appeared as a veterinary surgeon in that country. Mr. Jones has copied the blunders of others. He ought to have gone to the originals.

Mr. Jones is reported to have said that he did not believe "they yet thoroughly knew the physiology of the larynx;" and if he spoke for himself only, he might have added the anatomy of that organ. Not long ago, at a meeting, he asserted that the vocal cords were composed of white fibrous tissue; and on July 12th last, after paying me a visit (I think in June) to learn something of the subject, he writes, "I have dissected, since I saw you, many larynx, and I find that the *arytenoid* muscles on *right side* cannot elevate the *left arytenoid* cartilage, even when it is liberated by taking off its lower alæ (or wing). I have examined a horse's larynx to-day, killed this morning, that was a roarer, and both the vocal cords are very healthy; the left does not seem to be *relaxed* in the slightest degree. The *arytenoid* muscles on left side more than partly absorbed." I do not make this reference to Mr. Jones's anatomical, physiological, and pathological knowledge in a captious spirit, but merely to show how suddenly he has become so learned in the matter as to feel himself in a position to criticise, and attribute unworthy motives to, those who have studied the subject for as many years, perhaps, as he has weeks. I observe that he did not mention the result of his own operations. He ought to have done so. His remarks on the administration of anæsthetics read rather Rip Van Winkle-ish and startling, in the light of recent experience; no doubt we shall presently hear something of his having known all about it long ago.

I need not add that I warmly and indignantly repudiate the charge that I have attempted to obtain credit on false pretences. The charge is only made by those who are moved by ignorance, spite, and jealousy, or who are dying of mortification because they have been forestalled in independent work which has been going on for years, whereas they have only been at it a few months. All this I could hitherto afford to treat with the contempt it deserves, especially knowing the quarter whence it emanated. It would be an evil day for veterinary progress if such persons could influence or discourage those who

have its interests most at heart, or if they were accepted in any way as representing the profession, except in its least attractive aspects.

I think I can fairly lay claim to having been certainly the first, in this country at least, to draw serious attention to the necessity for attempting to remove the immediate cause of Roaring by intra-laryngeal operation, and to have given to the attempt all the care, encouragement, and energy I can command. Detractors and calumniators would have it appear that I am working from selfish and dishonest motives. That I shall leave to the judgment of the honourable colleagues who form, thank Heaven! a very much more considerable and influential portion of the profession than the badly-disposed individuals alluded to, and I think I may anticipate their verdict. GEORGE FLEMING.

Proceedings of Veterinary Medical Societies, &c.

THE VETERINARY MEDICAL ASSOCIATION OF IRELAND.

A MEETING of the Veterinary Medical Association of Ireland was held at the Gresham Hotel, Sackville Street, Dublin, on December 27th, 1888. President, Mr. Chas. Steel, F.R.C.V.S., A.V.D.; Hon. Secretary, Mr. J. McKenny, M.R.C.V.S. A large number of members was present.

Mr. B. L. GLOVER read the following paper on

MACHINE-MADE HORSE-SHOES AND NAILS; THEIR SUITABILITY OR OTHERWISE.

Mr. PRESIDENT AND GENTLEMEN,—The subject I have chosen to bring before you this evening for consideration is one belonging to the horse-shoeing art; and though, perhaps, not a very scientific one, or one that will result in a prolonged or elaborate discussion, still I hope it will lead to an interchange of some useful ideas.

I have designated my subject "Machine-made Horse-shoes and Nails; their Suitability or Otherwise," and I cannot find that a similar subject has ever been introduced or discussed by any other Veterinary Association.

In these days of machinery it would indeed have been surprising were the shoeing of horses to remain altogether a handicraft; and I venture to state that of all the innovations which have from time to time taken place in horse-shoeing, none can approach in importance the manufacture by machinery of suitable horse-shoes. By this introduction a great change, economical and otherwise, will, I think, take place in the system of shoeing horses; and although I would be sorry to state it as my opinion that horses belonging to the aristocracy, and which are generally kept for show or pleasure, will, in the immediate future, be found universally shod with machine-made shoes, still I am so favourably impressed with the system that I can quite understand not many years elapsing before the "work-a-day horse," be it brewer's, tramway, 'bus, or hackney, will be generally found shod with them.

In the army the adoption of machine-made shoes has taken place after a lengthy and elaborate test, and in accordance with a recent order, three-fourths of the cavalry horses at home are to be shod with them.

Having made these few preliminary remarks, I will now proceed to the immediate subject of my paper. So far as I can gather, the machine-made shoe had its origin in America. It was introduced into and patented in this country by one of the firm of American manufacturers, and from its introduction has resulted the English Company, known as "The United Horse-shoe and Nail Company, Limited."

The shoes manufactured by this Company are described as "patented steam-

hammered horse-shoes"; and, owing to a particular process of preparing the iron, it is claimed that they are more durable than the shoes in ordinary use. This alone would mean economy; but when it is known that a set of ordinary sized shoes costs considerably under a shilling, the saving of expense can be better understood. The shoes are of different sizes and shapes, and they vary according to the description of horse for which they may be required, such as saddle, carriage, tramcar, cart-horse, and even for hunters. Very many large companies, such as railway, tram and 'bus, have taken them into general use in England; and there appears to be an increasing demand for them at home and abroad, a fact which I think goes far to prove their suitability.

My own experience, however, is altogether confined to the machine shoe as adopted in the army, and which is obtained from "The United Horse-shoe and Nail Co." It is known as the "Seeley" pattern shoe, and can be described as a "concave fullered shoe," perfectly flat on the foot surface.*

In the ordinary sized shoes there are six nail holes, whilst the larger sizes have eight. The shoes are numbered in sizes from "one" to "seven," and within this range they are calculated, with slight alterations, and this in a cold state, to fit and suit all horses with normally shaped feet. The shoes are applied on the "cold-shoeing" system, which means that a forge can be dispensed with—an incalculable advantage—more particularly in connection with the shoeing of army horses. The introduction into the service of machine-made shoes, and the cold-shoeing system in connection with them, has been successful, and I have no doubt but the change is a permanent one.

Opinions, no doubt, vary somewhat, but I believe a large majority of the army veterinary surgeons who have had experience of the machine-made shoes, and of the system introduced with them, report favourably on the matter. Indeed, one veterinary surgeon, at present in charge of a cavalry regiment, told me not long ago that he considered the machine-made shoe in every way preferable to the ordinary hand-made one; and I may mention that his experiments went so far as to have on the same horse one fore and one hind foot shod with hand-made shoes, and the other two feet shod with machine-made shoes, the result being that the machine-made shoes proved the best wearers, and in other ways more satisfactory. My own experience of machine-made shoes enables me to speak well of them, and to recommend their being used; but I am of opinion that at present the manufacture of them is not as perfect as it might be.

The cold-shoeing system now carried on in the service in connection with machine-made shoes has now proved successful, and the cases of lameness which have come under my notice, resulting from the use of the machine-made shoe and cold-shoeing system, have been very few. I may mention that I have always been an advocate for cold shoeing, more especially for horses working on roads. For hunters and racehorses I would perhaps prefer hot fitting, for by this means you get closer contact, and therefore less liability of the shoes being pulled off in soft ground.

From what I have said, you will therefore gather that I approve of the cold-shoeing system of applying the machine-made shoe, and I believe it to be the correct system on which to shoe horses that are required for ordinary work.

A few remarks on machine-made nails will bring my paper to a close. They are also an important innovation, and they will no doubt in time entirely supplant the hand-made article. As with the machine-made shoes, the nails are not as yet perfect. I have had experience with several brands, and I find the same fault in them all. The shank is, as a rule, too broad and

* This is a mistake. The Seeley shoe had a thick toe and thin heels. The present army shoe was devised by the P.V.S.—Ed. *V. J.*

too thin. It is to the former defect that I attribute the tendency for machine-made nails to split the horn, and owing to the thinness of the shank they are difficult to drive, and particularly so for a learner; for if the nail is not struck very true, it generally bends. The thinness of the shank also, I think, gives a weak clench, and I have noticed a great tendency for the clenches of the machine-made nails to rise. I would certainly prefer the shanks being narrower and thicker, in fact, more the shape of the shank of the ordinary hand-made nails. For shelly or broken feet, when a nicety is required to drive the nails where they will best hold, and where a peculiarity of pointing or bending of a nail may be required, I find machine-made nails do not answer as well as the ordinary hand-made ones. They are, in my opinion, not rigid enough, and I think narrowing the shank and giving it the thickness would be a decided improvement. Notwithstanding the faults I see in the machine-made nail, my experience of them has proved, on the whole, satisfactory, and I have seldom seen a shoe that had been put on with them come off.

Before concluding, I would wish it to be understood that I am not writing in praise or otherwise of the machine-made shoe or nail as manufactured by any particular company; but I am rather advocating a system of shoeing horses with suitable machine-made horse-shoes and nails on the cold-shoeing principle.

Such, gentlemen, is the subject I this evening introduce for discussion. Of the suitability of machine-made horse-shoes and nails I personally have no doubt, and I am certain that as improvement in manufacture takes place, so will they come into general use. Their economy, efficacy, and application without the aid of a forge, must in time cause them to be generally adopted, and the value of their introduction into the army can only be fully understood by those who have experienced the difficulty that often exists of keeping horses shod up on field service.

An animated and highly interesting discussion was carried on by Messrs. Steel, Glover, McKenny, Lambert, Allen, Pickwell, Lawlor, and Braddell, resulting in a general advocacy of machine-made nails, especially those of the brands known as the "Lion" and "Newmarket."

Relative to the machine-made shoes, the general opinion was that they were imperfect.

Mr. McKENNY submitted an invention of his, an "Anti-windsucker Bit," which the members highly approved of.

After dinner the discussion on Mr. Glover's paper was resumed.

EXAMINATIONS OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

AT meetings of the Board of Examiners held in Edinburgh and Glasgow on and between December 13th and 18th, 1888, the following gentlemen passed the Oral and Practical sections of the final examination, and were admitted Members of the Royal College of Veterinary Surgeons:—

New Veterinary College.

Mr. T. M. Inglis	Portobello, Edinburgh
„ W. Kidd	Lochee, Forfarshire.
„ S. M. Yardley	Wolverhampton.
„ E. Learoyd	Edinburgh.
„ J. Garland	Newburgh, Fifeshire.
„ J. Appleyard..	Halifax.
„ H. R. Love	Linlithgow.
„ C. A. Szarbinowski.. ..	Manchester.
„ E. Wilkinson	Manchester.
„ H. McKee	Kirkcubbin, Co. Down.
„ F. W. S. Clough	Halifax.

Dick Veterinary College.

Mr. W. D. Hodge	Plymouth.
„ W. Henderson	Inniscarron, Co. Cork.
„ J. F. Sheehy..	Limerick.
„ F. Kidd	Carlow.
„ G. Parr	Liberton, Edinburgh.
„ W. Braes	Linlithgow.
„ E. P. MuHan	Dublin.
„ J. D. McGregor	Edinburgh.
„ A. C. Hamilton	Ballyshannon, Co. Donegal.
„ J. R. Farrar	Southport.
„ A. B. Bennett	Edinburgh.

Glasgow Veterinary College.

Mr. W. Robb, G.C.	Glasgow.
„ H. Munro	Fearn, Ross-shire.
„ A. E. McConnell	Londonderry.
„ J. L. Orr	Knockahollet, Belfast.
„ M. J. Stevenson	Dublin.

The following passed their Second Examination :—

New Veterinary College.

Mr. R. Eastwood.
„ M. A. Cassidy.
„ T. S. Snarry.
Mr. E. K. Barton.
„ J. Halliwell.
„ A. W. H. Dows.

Dick Veterinary College.

Mr. W. H. McArthur.
„ A. J. Robertson.
„ T. D. Hughes, G.C.
„ A. Johnstone, V.G.C.
„ W. Sherriff.
„ L. H. Fairer.
„ T. Aiken.
Mr. G. H. Yates.
„ W. B. West.
„ C. Byner.
„ P. A. McDonald.
„ J. E. S. Clarke.
„ C. E. Gray, V.G.C.
„ W. A. Potts.

Glasgow Veterinary College.

Mr. W. H. Wilkinson.
„ R. Crawford.
„ A. Campbell.
„ H. J. Potts.
Mr. T. B. Muter.
„ B. Ferrie.
„ T. H. Griffin, G.C.
„ J. Kinnear.

The following passed their First Examination :—

New Veterinary College.

Mr. A. Macgregor.
„ J. M. Maxwell.
„ J. Norbury.
„ A. J. Dalgleish, G.C.
„ C. Leghorn.
Mr. J. Brand.
„ H. E. Richardson, G.C.
„ P. O'Hanlon.
„ W. Litt.

Dick Veterinary College.

Mr. J. W. Nolan.
„ C. J. Carrick, G.C.
„ J. T. Boase, G.C.
„ A. C. Gray.
„ W. Cureton.
Mr. G. Best.
„ G. Jarrett.
„ R. Foreman, G.C.
H. S. Clark.
T. Condon.

Glasgow Veterinary College.

Mr. A. J. Milligan, G.C.
„ A. Campbell.
„ S. Martin.
„ J. Daly.
„ J. Meikel.
Mr. A. Greenhill.
„ F. Leunon.
„ R. R. H. Dalgleish, G.C.
„ F. T. Boyle, G.C.
„ A. Hamilton.

At meetings of the Court of Examiners of the Royal College of Veterinary Surgeons held in London on and between December 19th and 21st, 1888, the following students of the Royal Veterinary College passed their Oral and Practical Examination, and were admitted members of the profession.

Mr. E. Ainsley	Edmonton Green, Middlesex.
‡Capt. P. A. Morshead	
‡Mr. J. T. Firr	
„ E. Prentice	Royal Veterinary College, Camden Town.
„ C. H. Millman	Launceston, Cornwall.
„ S. T. Groome	Ranelagh Road, Dublin.
„ R. Polglase	Epping, Essex.
„ F. Matthews	Newland, Northampton.
„ H. Scarlett	Stoke Newington, S.E.
„ R. S. Pethick	Norley House, Plymouth, Devon.
* „ J. B. A. Hare	Deerpark, Cashel, Co. Tipperary.
„ F. Thompson	Harrowgate.
„ R. L. Crauford	Dartmouth, S. Devon.
„ F. J. Tucker	Abergavenny, Monmouthshire.
„ J. A. Fryer	Liverpool.

The following students passed their second examination.

Mr. J. D. Hunt.
„ C. De Cleverton.
„ B. Nettleship.
„ W. G. Brown.
„ M. Jacobs.
„ J. H. Hulseberg.
„ A. E. Roberts.
„ H. J. Farnham.
„ H. P. Turnbull.
Mr. J. J. Brown.
„ E. K. Edwards.
„ B. P. Boyle.
„ J. F. B. Moody.
„ W. C. Quinnell.
„ T. Stevens.
„ H. H. Hide.
„ P. W. Creagh.
„ A. Perkins.

The following students passed their first examination.

*Mr. F. W. P. Worsnop.
„ C. W. Howard.
„ W. S. Harding.
„ J. R. Roberts.
* „ R. C. Taylor,
„ T. F. Prime.
„ H. B. Parsons.
„ P. Perkins.
„ W. A. Stanway.
†Mr. P. Easte.
„ J. Limbrick.
* „ T. W. Garnett.
„ W. W. Scales.
* „ S. H. Skelton.
„ T. W. W. Hindle.
„ H. W. Leech.
„ H. Truman.
„ P. Wilks.
Mr. A. Hawes.

Marked thus * passed great credit.

Marked thus † passed very great credit.

‡ These have not yet complied with the requirements of the College.

R. RUTHERFORD, F.R.C.V.S.,
Secretary, Board of Examiners.

THE NATIONAL VETERINARY BENEVOLENT AND MUTUAL DEFENCE SOCIETY.

The Veterinary Mutual Defence Financial Statement,

From January 1st to December 31st, 1888.

Cash Received.

1888.	£	s.	d.
Balance in Bank, January 1st, 1888	387	16	4
Subscriptions for 1888	52	9	6
Bank Interest, June and December	5	7	9
	£445	13	7

Cash Paid.

1888.	£	s.	d.
Mrs. Rushall, entered in wrong Bank Book	5	0	0
Secretary's expenses	1	5	6
Treasurer's expenses	1	5	
Dec. 31, Cash in Bank	427	6	
Cash in hand since paid into Bank	10	16	0
	£445	13	7

Audited and found correct,
JNO. B. WOLSTENHOLME.
January 11th, 1889. THOMAS GREAVES, *Hon. Treasurer.*

The National Veterinary Benevolent Financial Statement,

From January 1st to December 31st, 1888.

Cash Received.

1888.	£	s.	d.
Balance in Bank, Jan. 1st, 1888	309	5	5
Cash in Mersey Docks	1,900	0	0
Cash from Scottish Metropolitan Veterinary Medical Society ...	20	0	0
Thomas Proctor	2	2	0
Dividends from Mersey Docks...	73	3	2
Bank Interest	5	10	10
	£2,310	1	5

Cash Paid.

1888.	£	s.	d.
Mrs. Rushall, three payments...	15	0	0
Cash in Bank	395	1	5
Cash in Mersey Docks	1,900	0	0
Year's expenses	0	0	0
	£2,310	1	5

Audited and found correct,
JNO. B. WOLSTENHOLME.
January 11th, 1889. THOMAS GREAVES, *Hon. Treasurer.*

List of Subscriptions to the National Veterinary Benevolent and Defence Fund.

1888.		£	s.	d.
Jan.	2. J. C. James	0	10	6
,,	2. E. Faulkner ...	0	10	6
,,	2. G. A. A. Oliver ...	0	10	6
,,	2. J. Rowe	0	10	6
,,	2. John Freeman ...	0	10	6
,,	2. R. Cartwright ...	0	10	6
,,	2. B. Cartledge ...	0	10	6
,,	2. Wm. Broughton ...	0	10	6
,,	2. J. Markham... ...	0	10	6
,,	2. R. Friggar	0	10	6
,,	2. W. Whittle	0	10	6
,,	2. B. J. Russell ...	0	10	6
,,	4. F. G. Samson ...	0	10	6
,,	4. G. Rugg	0	10	6
,,	4. R. Reynolds... ...	0	10	6
,,	4. W. Carless	0	10	6
,,	4. G. Newsom... ...	0	10	6
,,	4. S. Lock	0	10	6
,,	4. C. Sheather	0	10	6
,,	7. J. D. Overed ...	0	10	6
Jan.	7. Hy. Thompson ...	0	10	6
,,	9. W. Bowers	1	1	0
,,	9. R. C. Edwards ...	0	10	6
,,	9. W. F. Peacock ...	0	10	6
,,	11. W. Hy. Webb ...	0	10	6
,,	11. E. Nuttall	0	10	6
,,	11. F. Danby	0	10	6
,,	11. Wolstenholme ...	0	10	6
,,	13. F. W. Wragg ...	0	10	6
,,	13. F. T. Stanley ...	0	10	6
,,	13. J. Ball	0	10	6
,,	13. H. J. Goodall ...	0	10	6
,,	13. T. Walley	0	10	6
,,	13. T. E. Augers ...	0	10	6
,,	14. G. Banham	0	10	6
,,	14. T. Collins	0	10	6
,,	14. E. Beddard	0	10	6
,,	14. M. Storrar	0	10	6
,,	14. T. W. Broad ...	0	10	6
,,	14. G. Ball and Son ...	1	1	0

1888.		£	s.	d.
Jan. 21.	T. Barker	1	1	0
,, 21.	I. M. Ferguson ...	0	10	6
,, 21.	W. Roots	0	10	6
,, 21.	T. G. Lambert ...	0	10	6
,, 21.	Batt and Son ...	1	1	0
,, 25.	J. Anderton... ...	0	10	6
,, 25.	G. H. Pyatt ...	0	10	6
,, 25.	M. Chesterman ...	0	10	6
,, 28.	H. Olver	0	10	6
,, 28.	J. Woodyer	0	10	6
,, 29.	T. A. Dollar ...	0	10	6
Feb. 2.	C. Moir	0	10	6
,, 2.	H. W. Caton ...	0	10	6
,, 3.	W. Cawthorn ...	0	10	6
,, 6.	Ralph Cox	0	10	6
,, 6.	C. Morgan	0	10	6
,, 7.	T. Hopkins	0	10	6
,, 11.	W. Woods	0	10	6
,, 11.	P. Deighton ...	0	10	6
,, 11.	T. Aubery	0	10	6
,, 11.	T. Hopkins... ...	0	10	6
,, 11.	B. Russell	0	10	6
,, 20.	James Morton ...	3	3	0
,, 21.	R. Mackinder ...	0	10	6
,, 23.	O. Hill	1	1	0

1888.		£	s.	d.
Feb. 28.	T. Secker	0	10	6
,, 29.	Hy. Hogben ...	0	10	6
Mar. 11.	T. H. Leach ...	0	10	6
,, 14.	James Carter ...	0	10	6
,, 14.	T. Briggs	0	10	6
,, 21.	J. Lawson	0	10	6
,, 21.	A. Lawson	0	10	6
,, 22.	A. L. Gibson ...	0	10	6
June 11.	T. Proctor	2	2	0
,, 11.	Scottish Metropolitan Vet. Med. Society	20	0	0
July 25.	G. H. Darwell ...	0	10	6
,, 25.	P. Taylor	0	10	6
,, 25.	A. Taylor	0	10	6
Oct. 3.	T. Greaves	0	10	6
,, 3.	J. M. Axe	2	2	0
,, 3.	F. Riddler	0	10	6
,, 21.	Professor Williams...	1	11	6
,, 21.	E. Woodyer ...	1	11	6
Dec. 1.	J. L. Barling ...	0	10	0
,, 31.	Geo. Morgan ...	0	10	6
		£74	11	6

THE CENTRAL VETERINARY MEDICAL SOCIETY.

An ordinary General Meeting of the above Society was held at the First Avenue Hotel on January 10th. Mr. Alfred Broad, the President, occupied the chair, and there were present Professor Axe, Messrs. Burrell, Caton, W. H. Farrow, Gostling, Stanford Harrison, Herron, Hunting, Hurndall, Moore, Mulvey, Oatway, Raymond, Reid, Rogers, Rogerson, Roots, Row, Samson, Shaw, Singleton, Simpson, Slocock, Springett, Willis, Woodger, Wragg, Wright, and the Secretary, and Messrs. Duck and Evans, A.V.D., and Messrs. A. Smith and O. Walpole were present as visitors.

The minutes of the previous meeting were taken as read. The Secretary announced that he had received letters of apology for non-attendance from Professor Walley, Mr. William Lewis and Mr. S. M. Wilson, A.V.D., he also read a letter from the Secretary of the Charity Organisation Society, having reference to the distressed condition of an aged member of the profession.

Mr. F. W. Kendall of Hitchin, Mr. Herbert Springett of Sydenham, Mr. S. M. Wilson, A.V.D., and Mr. William Lewis of Barnet, were unanimously elected Fellows of the Society.

Mr. Hurndall exhibited the hocks of two horses, and pointed out the morbid process which had been going on; this condition supervened on injuries received.

Mr. Herron exhibited a portion of the liver of a horse which was a mass of Echinococcus-cysts, the whole organ having been similarly infested; unfortunately, there was no history of the animal whilst alive. The specimen was received with marked interest.

Professor Axe then addressed the meeting upon "Laryngo-tracheotomy in relation to Roaring;" his very interesting and instructive lecture was exemplified by a number of beautifully prepared specimens. The Professor also demonstrated his method of operating, by performing it on a recently removed larynx and trachea.

Laryngo-Tracheotomy in Relation to Roaring.

The operation of laryngo-tracheotomy is one to which I have no higher claims than to be a student, seeking to develop the high and important purposes for which it has been designed. The idea of profiting by that which one gives away cannot be said to apply solely to material things, but has, I believe, equal force and truth in respect to intellectual attainments.

When, therefore, *I ask* you to favour me with your attention for a brief period, it is with the object of laying before you my recent small experiences of an operation, which I believe to be one not only of present interest, but likewise of great future benefit to our animal population. In return, I hope that the ideas and methods to be enunciated will receive your careful thought and unsparing criticism, so that the little information I may impart may yield a fair return of wholesome correction and advice.

Hitherto laryngology, like many other departments of veterinary medicine, has only received a very general consideration from English veterinarians; and it must, moreover, be admitted that we have been unpardonably slow to follow the lead of our Continental brethren, notwithstanding that for some time much attention has been given to it in its surgical aspect by the light and leading of our profession abroad.

I accept it as a serious reflection on our craft that, with so much to call forth the most lively enterprise in this department of veterinary surgery, we should have failed to recognise the possible advantages of an operation which strikes at the most serious of the many ailments which afflict our horse population.

Roaring has from time immemorial been the bane of our best and most valuable studs. Thousands of horses are yearly condemned to the cab-yard and the knackers while still young and vigorous, crippled by a local paralysis of the most limited extent. It is very true that importance of pathological changes cannot be measured by their extent, but must for the most part be estimated by their seat and nature.

A trifling organic change in one organ may prove fatal, while in another less important to life such change would not even awaken consciousness of its existence.

In the malady under consideration, we have to deal with the displacement of certain passive constituents of the larynx, viz., the arytenoid cartilage and vocal ligament, which, in consequence of left recurrent paralysis, have been deprived of that support and control which render them amenable to the function of normal respiration.

As the result of muscular disability, the cartilage and cord, as shown in this specimen, has suffered downward and inward displacement, by which the glottal opening is diminished and a free ingress of air prevented. It is to this alteration in the relation of parts that the disease "Roaring" is unquestionably due. At present no satisfactory explanation has been given as to the precise origin and seat of the mischief by which the nervous mechanism of the larynx becomes disturbed; and notwithstanding all that has been said and written upon the subject of the etiology of Roaring, we have not so much as a plausible theory to offer as to whether the nerve lesion is central, peripheral, or reflex.

In this condition, then, we are not in a position to exercise that first principle of therapeutics which directs us to remove the cause, but are left with the naked alternative of dealing with the mechanical effect by the displaced arytenoid cartilage and relaxed vocal cord.

Under these circumstances, we are driven to the surgical device of removing parts which have become not only useless, but obstructive.

It might be supposed a fitting prelude to this paper, had I attempted to

enlighten you on points which have been so much canvassed of late, in regard to the priority of claim to laryngeal section, and the evolution of the operation of laryngo-tracheotomy. I do not, however, propose to attempt a solution of these questions, but leave them to be adjusted by those impulsive advocates of the rights of discovery, who, in disputing the claims of others, have diverted attention from the practical application and utility of the operation, which I hope and think mark one of the most important epochs in veterinary surgery.

The deplorable impatience which some members of our profession have shown in calling for results while inquiry is still being carried on, and the expressions of doubt and discouragement which have been cast at the workers and the work in this new field of research is, to say the least, ungenerous, and indicates, if anything, a want of scientific spirit, and an utter disregard of that sense of responsibility which attaches to the exposition of new methods and new doctrines in medical and surgical practice.

Like all other operations, that of which we are about to speak would seem to have grown out of the minds of many men, and useful as it may prove to be in its present form, it may still be but the beginning of a more complete success; for we can hardly believe that the resources of science, mechanical genius, and surgical device have yet been exhausted upon it, and it is quite likely that the operation of to-day will be voted a clumsy dismemberment and mutilation to-morrow.

We have already seen the abandonment of one method, which I shall presently refer to, and the substitution of another; and with improving light, more highly tutored hands, and more perfect appliances, modification and improvement may at least be expected.

If we do not know to whom the honour of having first practised laryngeal section for Roaring is due, and who devised the various methods which from time to time have been put forth, there can be no doubt as to whom we are mainly indebted for all the good that may accrue from it. Dr. Fleming has unquestionably, by the extent of his experiments and observations, afforded us the most satisfactory evidence of the value of the operation we are about to describe, and to him is deservedly due the credit of having forced it under the notice of the profession.

No less, he informs us, than seventy cases have been operated upon under his superintendence, and he ventures to anticipate that 90 per cent. will be rendered permanently "cured." Should these predictions be realised, the veterinary profession will be the means of redeeming, from a state of comparative uselessness to utility, a large percentage of the working horse stock of the country, and placing to the public credit in money and labour a sum which I will not venture to estimate.

Turning to the practical consideration of laryngo-tracheotomy, it has to be remembered that its value and importance, as a remedial measure, does not cease with its application to "roaring."

All of us can call to mind cases of laryngeal disease which, in the past, were sacrificed for want of the light now afforded us by recent experiences of laryngo-tracheotomy.

This part of the organism, so long regarded as the divinity of surgical intolerance, has proved itself a veritable playground for the scientific laryngologist.

To the student of laryngology, a fine field has been laid open for surgical enterprise; and it is certain that ere long many of those tumours, deformities, and ulcers, once necessarily fatal, will be deprived of their victims, and become the sport of our craft.

The operation as at first recommended by Dr. Fleming, consisted in the removal of the vocal ligament, and with it the vocal angle of the arytenoid cartilage. This suggestion was based upon the idea that the relaxed state of the former

permitted the air during inspiration to enter the ventricle, and to force the cord inward so as to encroach upon and diminish the laryngeal orifice so far as to occasion the abnormal sound referred to in the term "roaring." I have had opportunities of putting this mode of procedure to the test of experiment, and although, from a surgical point of view, the operation was perfectly satisfactory; as a curative measure, it afforded no relief to the subjects operated upon. The same unfavourable result was obtained in the two cases treated by Professor Smith at Newcastle during the annual meeting of the Veterinary Association.

Having failed in the course adopted, it was suggested to me by Dr. Fleming that the whole of the cartilage with the cartilage of Santorini should be extirpated, and with these I also include the vocal ligament. It is this operation which has yielded such definite results in the hands of Dr. Fleming, and such promising experiences in my own.

Mode of Operating.—Notwithstanding the nature of the operation and the importance of the part to be dealt with, it is not found necessary to submit the patient to any preparatory treatment. My small experience, however, has seemed to suggest that horses in good working condition recover more quickly, and are less liable to irregularities of reparation, than others in a less vigorous state of health. There appears in the latter to be a tendency to exuberance of granulation, and a corresponding want of development and maturation in the reparative tissue. Such cases lead to the necessity for repeated cauterization and excision of fungous overgrowth, and to possible interference with the success of the operation.

Subject, or course, to the larger experience of others, I think, in dealing with valuable hunters it would be desirable, as it would be also convenient to owners, to select, as far as practicable, the close of the hunting season as the time when the most favourable results might be expected.

Instruments and Appliances.—The instruments which I have employed in laryngo-tracheotomy are before you, and consist of (1) an ordinary scalpel; (2) a pair of spreaders; (3) a tampon-cannula; (4) a short-bladed scalpel, having the blade set somewhat at right angles with the handle, as devised by Mr. Raymond; (5) a narrow lancet-pointed scalpel; (6) a probe-pointed knife laterally curved, and (7) a pair of Vulsellum forceps. A plentiful supply of antiseptic solution, and three small sponges, with chloroform inhaler, completes the surgical appliances.

In proceeding to the operation, the horse is first placed under the influence of chloroform. The legs are then drawn upward so that the animal is brought to rest upon the back. Trusses of straw are now placed on either side to steady the body, and the dorsal extremity of the neck is raised by means of a pad, to give the head an inclination downward; the object being to favour the flow of blood towards the mouth.

The head is now well extended and the throat fully exposed. The operator, kneeling on the left of the patient, feels for the body of the thyroid cartilage, as forming one extremity of the cutaneous section, and the second or third tracheal ring which will limit the other.*

The first incision is carried through the common integument, along the mesial line of the neck, to be at once followed by the second, which separates the subscapulo-hyoidea muscles from each other. The larynx and first three tracheal rings are now fully exposed.

At this stage of the operation, some little escape of blood will have taken place from the divided vessels. Here a moment or two may be devoted to its removal, and the application of the cold sponge to arrest further hæmorrhage, before opening the larynx. This done, the point of the scalpel, with

* Mr. Raymond, after a large experience, deems it sufficient to cut through the crico-thyroid ligament, the cricoid-cartilage, and the crico-tracheal membrane.

its cutting edge directed backward, is thrust into the crico-thyroid ligament, immediately in front of the cricoid ring, from which point the section is carried on through the first two or three tracheal cartilages.

The edge of the knife is then turned in the opposite direction, and with the point the division of the cricoid ligament is carefully completed as far as the pomum Adami.

The introduction of the knife near to the cricoid ring is recommended, in order to obviate the risk of wounding the right vocal ligament during the expiratory movement when it is forced inward towards the middle line of the larynx. At this point the tampon-cannula is introduced into the trachea, and tied round the neck by means of tapes. The little india-rubber sac is now inflated with air, so as to fill up the passage and prevent the blood from going in the direction of the lungs.

The edges of the superficial and deep wounds are now seized by the spreaders, and drawn forcibly apart by assistants. An opportunity is here afforded of inspecting the vocal ligament, which should always be done with a view to determine if the roaring is due to left recurrent paralysis, or to some extra-laryngeal cause.

In the former case, the vocal ligament of the affected side will be found stationary or passive, while the right one will be noticed freely moving with each inspiratory and expiratory effort.

Where movement is observed on both sides, comparison must be made as to the relative freedom and extent of action. And if in these respects they are equal, left recurrent paralysis would be contra-indicated. On the other hand, should the mobility of the left ligament be restricted and its movement tardy, the operation may be proceeded with.

Here the index finger of the left hand is inserted into the left ventricle, and the vocal ligament drawn towards the centre of the larynx. While thus stretched, an incision is made across its thyroid attachment, taking care not to cut through the posterior constrictor muscle which lies immediately beneath it.

By the means of a pair of Vulsellum forceps, the divided ligament is then seized and a little traction made upon it, while with the rectangular knife the mucous membrane is divided along its posterior border, and the section then continued downward in the edge of the arytenoid cartilage, as far as the posterior or articular angle. The posterior constrictor is now dissected away from the arytenoid, and the cartilage pulled gently upward with the Vulsellum forceps, and by means of the lancet-pointed scalpel disarticulated from the thyroid.

In performing this part of the operation, a careful light pricking movement is made over the joint with the point of the knife until the capsular membrane is punctured. The knife is then carried round the articular border, with the cutting edge directed towards the joint surface of the arytenoid. By adopting this mode of procedure, the danger of damaging the thyroid is much diminished, and the untoward results of cartilaginous new growth materially obviated.

Having accomplished this, which by the way needs a little practice, the posterior angle of the arytenoid is altogether freed from the cricoid by dividing the two abductor muscles (crico-arytenoideus posticus and lateralis) at their point of insertion. This is done by passing the probe-pointed bistoury across the articulation, and describing a crescentic movement backward round the muscular tubercle of the arytenoid cartilage.

This done, the dissection is now carried on in a forward direction—separating the anterior constrictor and dividing the arytæno-epiglottidean fold. The latter section should be made close to the cartilage of Santorini, in order to save the mucous membrane as far as possible.

It only now remains to divide the inter-arytænoid ligament to free the cartilage from its fellow, and this is done by means of curved or rectangular scissors.

Altogether the actual operation occupies about ten minutes, and it need hardly be said that it is greatly expedited and facilitated by the employment of an electric lamp, such as I have here—this is connected with a neat portable battery, and supplies an excellent light; it was supplied by Messrs. Maw and Co. The instruments used in the operation were specially made for me by Messrs. Arnold, and they now supply a battery similar to the one referred to above.

In some some instances the hæmorrhage is considerable, and on all occasions free sponging of the interior of the larynx is necessary during the dissection, and one or two small vessels may require to be twisted.

Should the horse rally from the effects of chloroform before the operation is completed as may happen, it must be borne in mind that the re-administration of the anæsthetic cannot be effected through the nostrils, but must be carried on through the cannula, which is now the respiratory outlet.

At the close of the operation, the head should be slightly raised in order that the blood-clot lodged in the fauces and pharynx may escape by the surgical wound; and after the organ has been freely sponged, the dissected surface should be carefully scanned, and any loose shreds of mucous membrane carefully removed. The larnyx is now well sprayed with antiseptic solution, and the animal is allowed to rise.

After Treatment.—Twenty-four hours after the operation, the tampon cannula is removed. It is my practice to allow the patient food and water as usual from the time when the operation is completed. No difficulty appears to be experienced in swallowing solids, but a certain quantity of fluid will now and again pass into the trachea, and produce slight paroxysms of coughing when water is given with the head in an elevated position, and when taken from the ground small quantities will flow down the nostrils; but I have not experienced any ill effects from either of these derangements. To guard against food being washed either into one channel or the other, watering the animal before feeding is strictly observed. In cases where marked difficulty of swallowing water occurs, it is good practice to feed largely on carrots for a time, so as to render its use well-nigh unnecessary.

Three or four times each day antiseptic spray is thrown into the larynx, and the external wound is kept scrupulously clean. For the first two or three days a copious flow of mucus is discharged from the orifice in the throat, and later on muco-pus in increasing amount.

About the sixth or seventh day, the horse should be cast and the interior of the larynx inspected by means of the electric light, and this should be repeated again a few days later. Where exuberance of granulation is found to exist, the part must be cauterised and inspected again if deemed necessary.

After the first week, walking exercise for half an hour each day may be allowed, and the period increased as time passes on.

In from four to six weeks, the wound is completely healed, and a little trotting exercise may now be enforced.

It may be pointed out that it is not desirable to submit the horse to severe exertion at this time, for the purpose of testing his wind.

At least ten weeks should be allowed to transpire from the date of the operation before such a step is taken.

This period has not yet been reached by any of the cases upon which I have operated, but I am pleased to say that such trials as some of them have undergone fill me with hope of great success.

Mr. RAYMOND, A.V.D., on the invitation of the President, exhibited and

described the electric light and cautery, and other instruments he had devised for operating on the larynx. He said he had little to add to the lecturer's remarks, who had described the operation pretty much as he (the speaker) had demonstrated it to him. Since then he (Mr. Raymond) had simplified the operation, in so far that instead of the lengthy incision through the thyroid ligament, cricoid cartilage, tracheal ligament, and first three tracheal rings, as recommended by Mœller, he found it was an advantage not to cut through the three rings at all. He rather differed from Professor Axe in so far that he did not like to feed and water soon after the operation; he rather preferred to withdraw all food for awhile. He was not in a position to speak from personal knowledge of the percentage of cures or reliefs, because when the wounds were about closed the horses were distributed throughout the country. The Principal Veterinary Surgeon alone could give information on that point.

A good many people who formerly asserted that no operation on the larnyx could do any good, and held up those of opposite opinions to contumely, had changed their note, and it was their constant endeavour to make out that there was nothing new in the operation. As a mere operator, he could afford to look on with some amusement. He had shown that, with care, the operation was a safe one, and he imagined that like any other operation, there would be failures and successes. There was very little new under the sun—Pasteur had been preceded by former Pasteurs, Smith's operations were performed formerly by other Smiths; but he would try and get some credit for originality back to England by stating that he had it on very good authority that a veterinary surgeon of the name of Walker, used to operate in 1828-9 on roarers, in Dublin; he excised "something," but did not recommend the operation. If that be correct, Gunther was anticipated by twenty years.

Professor AXE said he was much obliged to Mr. Raymond for the remarks he had made, and for mentioning some of the minor details which he himself had overlooked; there was no doubt Mr. Raymond had more experience of the operation than any other veterinary surgeon in this country, and he hoped that the remarks which had been made during the evening would stimulate others, especially the members of this society, to pursue the matter still further, so that the operation might be made as efficient and as successful as possible. He felt that there was a great future for the operation, notwithstanding the adverse opinions that had been made respecting it. He thanked those present for the attentive hearing they had given to the few disconnected remarks he had made.

The PRESIDENT then proposed a vote of thanks to Professor Axe and Mr. Raymond, which was heartily carried. A vote of thanks was also, on the motion of Mr. WOODGER, accorded to Messrs. Hurndall and Herron for their morbid specimens.

SIDNEY VILLAR, *Hon. Sec.*

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting of this Association was held at the Blackfriars Hotel, Manchester, on Wednesday, December 12th. Tea at 5, business at 6.

Present: J. B. Wolstenholme (President), Messrs. Peter and W. A. Taylor, Thomas Greaves, Alex. Lawson, S. Locke, Jas. Ingram, Tedbar Hopkin, and John Moore, all of Manchester; Messrs. R. C. Edwards (Chester), H. Ferguson (Warrington), James Hart (Oldham), J. B. Taylor (Ashton-under-Lyne), James Marshall (Knutsford), W. H. Bridge (Bolton), W. Noar (Bury), W. Arkcoll (Leek); and Messrs. R. S. Reynolds, S. Jackson, W. Welsby, and the Secretary, of Liverpool.

Letters of apology regretting their inability to be present were received

from Professors Williams, McCall, Walley, and Lewis ; Messrs. John Malcolm, E. Faulkner, H. Kidd, J. S. Hurndall, T. Briggs, and R. Hughes.

A letter was read from Mr. R. C. McRaith, stating that having removed to London, he tendered his resignation as a member of the Association.

Mr. R. Hughes, M.R.C.V.S., of Oswestry, was elected a member of the Association.

The PRESIDENT nominated for membership of the Association Mr. Peter Pike, M.R.C.V.S., of Manchester, and Mr. William Noar, M.R.C.V.S., of Bury. Mr. W. W. Bridge also nominated Mr. Jos. Urmson, M.R.C.V.S., of Bolton, for membership of the Association.

The TREASURER then read his annual report.

Proposed by Mr. THOS. GREAVES, seconded by Mr. T. HOPKIN, that all members who were three years in arrears be struck off the books.—Carried unanimously.

Proposed by Mr. T. HOPKIN, seconded by Mr. PETER TAYLOR, that a letter of condolence be sent to the widow of the late Mr. John Lut, of Bolton.—Carried unanimously.

Proposed by Mr. T. HOPKIN, seconded by the PRESIDENT, that Messrs. Sam. Locke and W. A. Taylor be elected auditors.—Carried unanimously.

A very hearty vote of thanks to the retiring office-bearers for their services during the past year was proposed by Mr. PETER TAYLOR, seconded by Mr. THOMAS GREAVES, and put by Mr. ALEX. LAWSON.

The election of office-bearers for the ensuing year then took place.

Proposed by Mr. PETER TAYLOR, seconded by Mr. S. LOCKE, and supported by Mr. W. A. TAYLOR, that Mr. E. Faulkner be elected President.—Carried unanimously.

Proposed by Mr. W. A. TAYLOR, seconded by Mr. PETER TAYLOR, that Mr. R. S. Reynolds be elected a Vice-President.—Carried unanimously.

Proposed by Mr. ALEX. LAWSON, seconded by Mr. PETER TAYLOR, that Mr. James Hart be elected a Vice-President.—Carried unanimously.

Proposed by Mr. THOS. GREAVES, seconded by Mr. PETER TAYLOR, that Mr. Sedbar Hopkin be re-elected Treasurer.—Carried unanimously.

Proposed by Mr. J. B. WOLSTENHOLME, seconded by Mr. ALEX. LAWSON, that Mr. Arthur Leather be re-elected Secretary.—Carried unanimously.

HEREDITARY UNSOUNDNESS IN HORSES.

After some preliminary remarks, Mr. PETER TAYLOR said agricultural societies in England now numbered from eighty to ninety, commanding and distributing large sums of money annually, for the improvement of the horse stock of the nation. They are capable of doing incalculable good not only in improving the physical development, but also in eradicating constitutional weakness, bad conformation, and hereditary disease from our horses. There should be at all exhibitions of agricultural societies three veterinary surgeons, the majority to carry any disputed case. The duties are both onerous and delicate, and to perform them efficiently requires time and great practical knowledge, yet in the short time of half an hour these societies wish one to give an opinion on four, six, or eight horses ; it is not therefore surprising there should be dissatisfaction, disappointment, and loud complaints. The whole arrangements at agricultural and horse shows require immediate alteration. Proper and sufficient time and ample room ought to be found for the professional examination of the exhibits. Professor Axe says it is difficult to estimate the annual loss sustained by breeders and owners of horses from the insidious influence of morbid inheritance ; he infers, from twenty-five years' experience, it is not less than from sixty to sixty-five per cent. ; and the Professor calculates the loss sustained by our breeders and owners to amount to four millions sterling, and the greater portion falls on

the farming class. If at the exhibitions of horses at these eighty or ninety agricultural shows, from the Royal downwards, there be from a thousand to two hundred animals exhibited, the aggregate number must be great. Well might Mr. Jacob Wilson exclaim the time has arrived when the Royal Agricultural Society must recognise its responsibility, and do something to stem the tide of deterioration in our horse supply, which seemed to be annually increasing. Numerically, then, and physically too, this condition of affairs calls aloud to choose an authority to do something whereby the ruinous influence caused by inheritable disease shall be diminished and controlled, if not thoroughly eradicated from our breeding animals; and comprehensive veterinary supervision of all horses intended for stud purposes will do an immense amount of good in stemming the tide of such hereditary disease. It is not my intention to enlarge upon individual diseases before such an enlightened body of professional men, but I will content myself by enumerating those diseases I believe to be hereditary. Mr. Taylor named, in addition to those diseases usually accepted as hereditary, many others which his experience led him to conclude were inheritable, and concluded by saying, I submit this very important and intricate subject to your care and consideration, knowing, as I do, how shallow we are in our boasted wisdom, and that there is no finality in human knowledge, and believing, as I do, the time will come when the why and wherefore of any point in nature will be solved.

Mr. R. S. Reynolds: The idea of ascertaining from the veterinary profession what diseases affecting the horse should be considered of hereditary type is probably the natural outcome of differences in professional opinion that have been expressed upon a few notable, and perhaps exceptional cases met with at horse-shows. And no doubt it is wise upon the part of breeders, exhibitors, and show-yard authorities to endeavour to fix upon us the responsibility of scheduling all the hereditary ailments to which horses are liable. I cannot say that the veterinary authorities of Red Lion Square have shown an equal amount of discretion in accepting so readily the grave responsibility. Nor can I view their decision in any other light than as being calculated to prove abortive in result and detrimental to the true interests of the profession. It has been elsewhere pointed out that opinions upon the actual existence of acknowledged hereditary defects have been many times, and will continue to be, causes of dispute between veterinary surgeons of known repute. No doubt that is so, but those differences do not exceed in importance opposing views upon what are to be considered diseases due to hereditary taint, and what are not so attributable. There will certainly be a unanimity of opinion with regard to the classification of a number of diseases, but there are others upon which agreement will be impossible, and any antagonism amongst members of the profession upon such points will be used by interested sections of the outside public to bring ridicule and discredit upon us. Nor are these the only or the greatest difficulties that present themselves. Where is the line of demarcation to be drawn between the existence of hereditary disease and the presence of defective conformation due to congenital and possibly to ancestral causes? To what extent must a disease be developed, and how far must defective conformation exist, before a certificate of soundness is withheld? In what category are curby hocks and weak-heeled, brittle, oyster-shaped feet to be placed? Are horses with round, short, fleshy, weak though technically sound hocks, that can scarcely carry the carcase of a lumbering fat horse, to be passed sound, whilst those with long, bony, ragged, and maybe uneven hocks, that are flexed and extended with freedom and power, and which you know from experience will stand the most severe tests of physical exertion, to be rejected? How, again, is the very commonly met with relaxation of the ligaments of the fetlock joint to be dealt with? Questions such as these may be multiplied almost indefinitely, each one increasing our difficulties.

Mr. PETER TAYLOR has included in his list "Exostoses"! He knows as well as any one here that it is very usual indeed to find amongst highly fed young stock big bony enlargements on the inner side of the shank bones immediately under the knee. It is only two or three years ago, gentlemen, that I first learned that this particular Exostosis was dignified with the name of "Knee Spavin," and on the same occasion I saw a young horse possessing a pair of these excrescences rejected for hereditary unsoundness, on that account, of course. I had previously seen very many animals similarly affected, but neither before then nor since have I seen the least lameness result from their presence, and it is quite exceptional to find them amongst stud animals that have arrived at maturity. It is absurd to suppose that any man will blindly subscribe an edict issuing from the Royal College. To be of practical service in a show-ring, the veterinary referee must determine by his experience and knowledge upon each individual animal brought under his notice; to give an opinion according to prescribed rules, or to be governed by hard and fast lines, will quickly prove him to be unfitted for the duties of his office.

Mr. THOS. GREAVES remarked, I have listened with much pleasure and interest to the reading of Mr. Taylor's paper. It shows that great pains and much anxious thought have been bestowed upon it. I had the pleasure of listening to the one on the subject at the Border Counties, by Mr. Hunting, and I also read the one on the same subject by Mr. Stevenson, read before the North of England Association. The subject has been well ventilated, but there are many matters still beyond our reach. There are one or two aspects of this subject which have not been touched upon, and which I wish to call your attention to. The physiology of heredity; what is its nature? I have pondered over this subject a good deal; it is the highest interest that scientific inquiry can be occupied in, and the view I take of it is this, that it is simply a misnomer to call some of these defects hereditary disease. Many of these defects have not been produced by disease at all—not in the slightest degree; for instance, a foal is born with one hock larger than the other, a decided bony enlargement in the seat of Bone Spavin. Now, I think no one will contend this enlargement is the result of diseased action—that is, inflammation, and exudation of ossific matter. I could instance navicular and other affections as coming under the same category, but to call them disease, or that they are dependent on the same phenomena as tissues produced by real diseased action, to say the least of it, is incorrect. We may call it a malformation, a deformity, an abnormal growth, but we have no right to call it disease, any more than to say that a calf born with two heads or six legs is a result of disease or hereditary disease. The view I take of it is this: Hereditary affections, pure and simple, are certain defects existing in the seed of the sire or dam, and originate in the embryo or fœtus at the moment of copulation. *The die is cast then;* it is transmitted, and is irrevocable. It goes on and simply obeys the natural law of development or growth, and in which diseased action has nothing whatever to do. I grant you that there are innumerable instances in which hereditary tendency may lie in the system for months or years in a latent form, such as consumption or scrofula in the human being, and many diseases in our domestic animals. These may exist unobserved until some existing or favourable conditions call them forth, but I contend these cases do not mitigate against my hypothesis. In all these complex and obscure matters we have yet much to learn, and they want much more ventilating and investigating. It is the special and peculiar province of our profession to perform this duty. As far as I can see, many of these so-called hereditary diseases will be traceable to an origin the same as I have sketched out above, and the same as I have elsewhere described certain facts in reference to some cases

of Roaring, but on this subject we want more light and more knowledge. It will all be made clear to us as the mysteries and secrets of nature become better known.

Mr. T. HOPKIN: I agree in a great measure with what Mr. Reynolds has said. To give a list of diseases, and say these only or always are hereditary, would be absurd, and only end in confusion and contempt. Whilst admitting this, there is no doubt in our profession much knowledge that would be of great benefit to the breeder, and that would gladly be given if they desire it. In breeding there is first the double parentage to consider; a defect or unsoundness in one parent may be overcome by progeny taking in a marked manner after the other parent. The treatment of young stock up to a certain age may, and often does, materially interfere with development of unsoundness, to which there may be hereditary tendency. One reason Roaring has increased so much of late is that in racing horses may make a name by their winnings before they arrive at the age Roaring usually develops, and having finished their racing career, they go to the stud and quickly degenerate into roarers, living on the fame acquired before this was developed. Conformation is also an important factor in soundness. An animal may not be actually unsound technically, but his conformation may be such that, if tested by work, would undoubtedly result in unsoundness. To illustrate this, if a horse that in racing or hunting with good-shaped hocks springs a curb you would say he was unsound; but another horse, with bad-shaped, bent hocks, may not have a curb, because he has never galloped or been tested—technically sound, but practically, for breeding, not to be compared with the other. Circumstances: The surroundings and treatment of young stock may be either favourable or unfavourable to the development of hereditary defects, all tending to make it impossible for a hard or fast line to be drawn of hereditary unsoundness. If we take the list as enumerated by Mr. Taylor it would be easy to pick out a large number that are not constantly or even generally transmitted from parent to offspring. There are degrees of unsoundness, some defects rendering animals so thoroughly useless that they should receive no quarter. Amongst these I should place true Ringbone, Navicular Disease, Roaring, nervous and spinal affections.

Mr. S. LOCKE: Mr. President and Gentlemen,—I don't know that I can say much more on this subject than what has been said. It is one of very great importance to the veterinary surgeon, as also to breeders of stock. I am afraid the Council of the Royal College of Veterinary Surgeons will have a difficult problem to solve in answering properly the questions put to them by the Royal Agricultural Society, and if not careful will, in a manner, stultify themselves by drawing out a hard and fast line between hereditary and non-hereditary disease, as there will in some instances always be differences of opinion. Even now some of us differ very materially with regard to a horse with odd feet. I am decidedly of opinion that a horse with odd feet ought to be rejected. The agricultural societies are in a measure to blame for the uncertainty that exists. Very often the opinion of the veterinary surgeon is not asked; everything depends upon the judges. They ignore the veterinary surgeon, examine the animal, and give their decision without consulting him, thus leading sometimes to law and differences of opinion. There ought to be three veterinary surgeons at shows, their opinion taken as to soundness and hereditary tendency; the majority to rule, and their decision to be final.

Mr. ALEX. LAWSON: I desire to join in thanking Mr. Peter Taylor for his kindness in bringing forward, at such short notice as he has had, such a useful subject, and now occupying so much public attention, as hereditary diseases of horses. At the same time I should like to say a few words as to the position and difficulties veterinary surgeons have to contend with at most of the agricultural shows. The position is considered very secondary to judges,

and in most cases they are kept hanging about in the ring until the horses have been judged, and only in cases of dispute as to soundness is the veterinary surgeon asked for his advice, instead of being called in to examine the prize-winners immediately after the decision of the judges is known. A suitable place for making the examinations ought to be provided; and Ireland leads the way at present, as the committee of the Dublin Show have regularly appointed veterinary surgeons to each class, and provide a good ground for each horse to be run in hand, a box to see the eyes, and a field to test the wind. I think breeders of horses ought to be associated with veterinary surgeons in coming to a definite conclusion as to what are hereditary diseases, as they are more likely to give the facts from their own personal knowledge than most veterinary surgeons have an opportunity of doing. Still, at the same time, great care must be taken, and the evidence well verified, as you will see both breeders and veterinary surgeons differing in their opinion as to actual facts, as to what is sound and unsound. For instance, I have seen a veterinary surgeon condemn a horse for Sidebone, and two others pass him five minutes afterwards. There are about ten diseases which most of us agree are hereditary, and which come mostly before the public, and horses suffering from any one of them ought certainly to be rejected.

Mr. R. C. EDWARDS said it would take too long a time to give an individual opinion on each hereditary disease noticed by the essayist. He cited a sire which had sound hocks; about 70 per cent. of his stock when two or three years old had curbs, and if such animals were only used for harness purposes the curbs would disappear when they were seven or eight years old, but if used for hunting purposes the curbs would become worse, rendering firing and blistering necessary. Roaring was not detected at birth, usually followed cold, or more especially Strangles. Foals, as a rule, were born sound, and it was in after life that the hereditary diseases were developed. A colt at two years old might be perfectly sound, and passed as such, but at three years old might become unsound from hereditary taint, hence a difficulty in detecting hereditary disease in the early period of life. He once examined a cart stallion, aged two years, passed sound. At three years old he had Sidebone. His sire had no Sidebones, but his dam had. To draw a hard and fixed line respecting hereditary diseases, in his opinion, seemed almost impossible.

Mr. W. A. TAYLOR: It is a significant fact, and one for congratulation, that the Royal Agricultural Society should apply to the Royal College of Veterinary Surgeons for assistance in their attempt to deal with the question of hereditary disease in horses intended for stud purposes. With a twenty years' professional experience, and a fairly close study of the question of heredity in other animals besides the horse, I feel some difficulty in arriving at a satisfactory conclusion as to which equine diseases are, and which are not, hereditary. Many more diseases than are usually accepted as hereditary could, if careful record had been kept, I believe, be proved to be so, and to the neglect on the part of many of us to collect and record all facts likely to bear on the subject must be attributed the loss in value of our evidence. It is necessary for the undeniable proof of a disease being hereditary that well-recorded facts, and not tradition, shall be forthcoming. And even then, admitting a carefully tabulated list of hereditary equine diseases, the *crux* will appear when these diseases are sought for by veterinary surgeons. The want of anything like unanimity of opinion as to the presence or absence of a disease has unfortunately led the public to value less highly than they could otherwise have done the opinions of veterinary experts. As a set-off to this, it may be said that at most important exhibitions of horses nowadays it is usual to appoint three veterinary surgeons,

and the opinion of the majority is accepted. Certainly, this is safe so far as it goes, but what do we find at subsequent shows? other veterinary surgeons appointed whose opinions may, and doubtless do, differ from those of their *confrères* at the previous show. Consequently an animal rejected at one show may pass muster at another. To my mind there are malformations of limb far more serious, from a breeder's point of view, than certain hereditary unsoundnesses, and it certainly seems to me that it would be cruel to reject a sire or intended dam for a "well-situated" splint, and to pass one that has sickle-shaped hind legs or curby hocks. I am extremely anxious to learn which hereditary diseases the Council of the Royal Agricultural Society will decide to schedule as constituting disqualifications for prize-taking, and whether or not the question of degree will enter into its decisions. The whole question as it affects the horse-breeding and exhibiting community bristles with difficult problems, and if out of the chaos of evidence laid before the Council of the Royal Agricultural Society that body finds itself equal to a satisfactory solution of the question in all its aspects, which I very much doubt, horse-owners, breeders, exhibitors, and veterinary surgeons alike will own it a debt of gratitude difficult to discharge. My advice to breeders of all stock is to breed from the fittest and soundest *only*, if they desire soundness in the progeny.

Mr. ALEX. LAWSON moved the adjournment of the discussion to the next quarterly meeting.

Proposed by Mr. T. HOPKIN, seconded by Mr. T. FERGUSON, that Messrs. Greaves, Reynolds, W. A. Taylor, Alex. Lawson, S. Locke, and office-bearers form a committee to revise report of discussion.—Carried unanimously.

Proposed by Mr. THOS. GREAVES, seconded by Mr. PETER TAYLOR, that a committee be appointed to inquire into the financial condition of the Association, and that the auditors and office-bearers form the committee.—Carried unanimously.

The usual vote of thanks to the President concluded the meeting.

ARTHUR LEATHER, *Hon. Sec.*

Army Veterinary Department.

Veterinary Surgeons Burt and Davies have arrived in England on sick leave from India. Veterinary Surgeons J. H. Steel, Waddell, and Richardson return to India; and Jackson, Tibaldi, and Drage embark in February for a tour of service in that country.

Obituary.

We deeply regret having to announce the death of William Lamb, M.R.C.V.S., late Inspecting Veterinary Surgeon of the Bombay Army, which occurred at Coonoor, in that Presidency, on October 6th, at the age of fifty-six years. Mr. Lamb was one of the few remaining Veterinary Officers of the defunct East India Company, and retired a short time ago. He was a student of the Dick College, receiving the certificate of the Highland and Agricultural Society in 1850, and becoming a member of the Royal College of Veterinary Surgeons in 1880. An old and cherished friend writes of our deceased colleague: "Mr. Lamb was much beloved by his brother officers of the 3rd Bombay Queen's Own Light Cavalry, in which regiment he saw much service; and on one occasion led a charge of a portion of the regiment during the Indian Mutiny in 1856-57. Of late years he was employed as

Superintendent of the Horse-breeding Department in the Bombay Presidency, and the good work performed by him in that capacity was acknowledged by the Government of Bombay. The profession has lost in Mr. Lamb a scientific veterinarian, and an excellent practitioner." The high esteem in which he was held is also testified to by notices which have appeared in the local press, from among which we select the following from the *Poona Observer* of October 11th : "His many friends at Poona and Bombay will regret to hear of the death, at Milford Lodge, Coonoor, of Inspecting Veterinary Surgeon Lamb on the 6th inst., which is chronicled by the *South of India Observer*. The name of the late Inspecting Veterinary Surgeon William Lamb is well known in this Presidency, where he made himself conspicuous among sportsmen in every phase of field sport. In the saddle over a country, or on the flat, he was a centaur. As a 'pig-sticker' he was famous and foremost. In the tented field he was no less notorious as a soldier, having captured a stand of colours during the charge of his regiment in the Persian war. He was withal modest and retiring; a genial kind friend, full of *bonhommie*, and even when the affliction of loss of sight overtook him, he resignedly accepted his fate like a large-hearted hero."

Alexander Grey, F.R.C.V.S. (1887), died at Leith on the 15th January. Graduating in 1880, Mr. Grey remained attached to his school in Edinburgh (Dick's) for some time as an assistant teacher. Two or three years ago he commenced to practise his profession in Leith, where, we believe, he was achieving success. He was an enthusiastic student of pathology, and an earnest worker.

The following deaths have also occurred :—

W. B. Garner, M.R.C.V.S., St. Ives, Hunts, a graduate of 1868.

Thos. Colley, M.R.C.V.S., Conisborough, Yorks, a graduate of 1871.

J. McCarthy, M.R.C.V.S., Leap, Co., Cork, a graduate of 1880.

Jurisprudence.

AN EXTRAORDINARY CASE.

HASTINGS COUNTY COURT, DECEMBER 17TH, 1888. BEFORE HIS HONOUR JUDGE MARTINEAU.

Woodruffe Hill v. *General Patton Bethune* was a claim for £4 13s. 6d. for veterinary attendance. There was a counter-claim for £50 for damages in respect to the treatment of a horse.

Mr. F. A. Langham appeared for Professor Hill, and Mr. Lamb (of Brighton) conducted the case of General Bethune.

On the application of Mr. Lamb, witnesses were ordered out of court. Great interest seemed to be taken in the case, a large number of ladies and gentlemen from St. Leonards being accommodated with seats in the gallery and other parts of the court.

Mr. Langham, in opening the case, said this was an action brought by Mr. Woodruffe Hill against General Patton Bethune for £4 13s. 6d. for attendance as veterinary surgeon, visits, and other things, to certain dogs and horses belonging to the General. The case, as far as plaintiff's case was concerned, was a simple, ordinary one, but the defendant had pleaded a counter-claim, by which he sought to recover £50 damages for injuries sustained by reason of plaintiff's alleged ill-treatment of a horse which he was called upon to attend.

The amount of the claim in dispute was reduced by striking out amounts which were agreed upon.

After a little skirmish between Mr. Langham and Mr. Lamb, all witnesses were ordered out of court.

Mr. Langham then proceeded with his opening statement.

John Woodruffe Hill, F.R.C.V.S., veterinary surgeon of twenty years' practice, and late Professor of the Downton College of Agriculture, said he had very considerable experience with regard to the treatment of animals. On December 11th he was sent for, to see a horse belonging to General Bethune, which was at Skinner's Mews. He went there, and saw the animal in question. It had an attack of Apthæ or Thrush of the mouth, the upper lip being affected. There was a collection of small vesicles in the mouth, and it was a simple case, a gargle being used as the remedy. There was no necessity for any further examination. He was again sent for on the 14th, for the express purpose of rasping the same horse's teeth, the messenger stating the operation had been recommended by Mr. Watney, a friend of the General's, and that unless he (witness) could go at once, another veterinary surgeon would be called in. He went immediately on receiving such an urgent message from the General, taking his rasp with him. The horse was in the same stable, and he found that the teeth were uneven. General Bethune's groom was present. At this date the horse had quite recovered from the Apthæ. He felt the horse's teeth from the outside through the muscles of the cheek, and remarked that there was nothing extraordinary about their condition, and he also said he couldn't operate single-handed, and the groom went out and brought back a strange man, and commenced to put a twitch on him. Witness objected, but he said if he did not the animal would knock witness's brain's out with one of his fore-feet. The twitch remained on, and the strange man, at witness's request, held the animal's head on the off side. Witness commenced on the teeth in the upper jaw, and when he had done that he turned round to wet his rasp in a pail of water. He had not turned his back a moment when the man exclaimed, "Good God! look here!" Witness turned round, and found the man as white as a ghost, and he was holding a piece of the horse's tongue in his hand. Witness asked the man if the horse had snatched its head up, and he replied, "No, he never moved." The piece was just under five inches long. It was apparently affected with chronic ulceration, which had been going on for a very considerable time. The detached portion did not bleed, and there was no flow of blood in the mouth; a little blood, however, was visible in half-an-hour's time. The man denied that the horse had jerked at all, and said it had been perfectly still, adding, with reference to the tongue, "Why, it's rotted!" It would be almost impossible to pull a piece off like that if the horse's tongue was in a normal condition; he was of opinion, in fact, that it would be easier to pull the organ out by its roots. On examination he found extensive ulceration, sufficient to account for easy separation. The man said it was as much as his life was worth to go to the General, but witness went and saw the General and explained what had happened.

Mr. Langham—And you are still alive! (Laughter.)

Witness—Yes, the General's style had no terror for me. The General seemed perfectly satisfied, and said he was sorry, for it was his son's first charger. Witness offered to meet any member of the profession with respect to the matter, but he emphatically negatived the suggestion, and said he could not afford to have Mr. Mannington down; he was his veterinary surgeon. He also said the animal was a hard puller and a "star-gazer." He seemed perfectly satisfied with witness's treatment of the case, saying that he had perfect confidence in his skill and ability, and should leave the case entirely in his hands. He also said, "Thank God it didn't happen on the Parade when the groom was behind my daughter." The horse was an inveterate puller and a "star-gazer," and had been used with various bits of a more or less severe type; in fact, at that interview, the General asked his opinion about one which he showed to him in the dining-room and which he,

witness, stigmatized as an "instrument of torture." Yes, he said, he thought it was a cruel thing. Witness attended the animal afterwards daily, ordering perfect quietude with soft food and slops.

On the 18th December, four days afterwards, upon entering the stable the groom said, "The General's compliments, and he does not require you to come again." "Indeed," witness said, "why?" and the groom replied, "I suppose you have heard the report about your tearing out the tongue." "What!" he said, "you know better than that; I did not even see the accident happen." "Yes, sir," the groom said, "that's right enough; the General has been down here cross-questioning me, and I told him I could go down on my bended knees before my Maker and swear you had nothing to do with it." Witness said he must have an explanation of such a charge; it was monstrous. He immediately drove towards the General's house, and in the Norman Road met him and pulled up—but he walked on, so he told his son to turn the gig round, and drove up to him; he got out and asked for an explanation. At first the General was inpertinent, and stormed about the road; then he refused to hear or say anything, and finally accused him of tearing the tongue out, and said that Mannington said witness must have taken hold of it with both hands and pulled. Witness said he should make him prove what he stated, and he said, "You can do what the devil you like." Witness notified his intention of having Professor Axe down. It was the customary thing to have the horse's tongue held while the process of rasping was going on. He telegraphed to Professor Axe to come down, and upon receipt of his reply he notified to General Bethune the time he would arrive. Witness met the professor at Warrior Square station, and they proceeded at once to the Mews, where they were surprised to learn the horse had been sent away to Brighton that afternoon. However, Professor Axe examined the detached portion of tongue, which had been retained and sketched by witness, and he confirmed his opinion as to its diseased condition.

Similar confirmatory evidence had been previously given by Dr. Arthur Gamgee, who had examined the structure as simply a morbid specimen. The horse was in much better condition now than before the accident—a result he foretold to the General at the time.

Mr. Lamb cross-examined witness at length, the result being very amusing, and two or three times the answers were parried in a very adroit manner. Mr. Lamb was asking about the absence of blood, and Mr. Hill suggested that Mr. Lamb did not know where the arteries were situated in the horse's tongue. Mr. Lamb answered that he took it that there was blood all over the tongue. "That's just where you make the mistake," rejoined Mr. Hill, in a dry, cool manner. Witness strenuously denied that he ever said the horse had cancer. He would swear and could prove he never said so, but it was severely ulcerated, and the hard everted and elevated edges of the mucous membrane which formed the boundary to the ulcerated structure was in his opinion undeniable proof that destructive process had occurred at a period long before the date of separation.

Mr. Lamb afterwards got on to the question of the assistant, and suggested that it would have been the proper manner for a veterinary surgeon to take his assistant.

Mr. Hill answered—Why, my dear sir, there is not one man out of fifty in the profession that can afford to keep an assistant. I can't! (Laughter.)

The Judge—Does it require a professional hand to hold the tongue?

Witness—Certainly not; there is no skill required. It is a frequent occurrence to have a groom and a blacksmith.

Mr. Lamb—Yes; the blacksmith would naturally know something about it.

Mr. Hill—No, he wouldn't, he would be just the worst man for it.

Mr. Hill further said the man held the tongue properly, and added that they had been trying to find him, but hadn't succeeded. Perhaps Mr. Lamb's side had got him. He had never heard of a horse's tongue in a healthy condition being severed transversely across. Such a thing might be possible, but he should think highly improbable. No hæmorrhage occurred in this case, because the vessels were blocked up with pus and fibrinous matter, and the organ was already semi-detached.

A question as to why the action had not been taken before now—the occurrence dating two years back—was answered by the statement that Mr. Hill had waited for the other side to fire the first shot, but they had not done so.

Mr. Hill—"Why didn't you commence before, when Mr. Mannington was alive? I left the case entirely in Mr. Langham's hands, but at last as I continued to hear of your client gossiping with everyone he met, of this case, I determined to give him an opportunity of proving it. You know you want £50, I only want £4 13s. 6d., and an end to the matter." (Laughter.)

Re-examined—He acted under Mr. Langham's advice, which was to let the General "fire the first shot."

Professor John Wortley Axe, Professor at the Royal Veterinary College, said he came down to see Mr. Hill on receipt of a telegram. He showed witness a portion of a horse's tongue. He found a small scar on top of the tongue, and the under-surface of it was in an ulcerated condition. It was only part of the tongue, and the ulceration existed upon the part from which it had been severed. The muscular structure was also softened and infiltrated. He received from Mr. Hill a history of the case, and from his examination of the tongue, and the statement by Mr. Hill, he came to the conclusion that no great force had been used in its being severed from the body of the tongue; and, in his opinion, it was not likely that a healthy tongue would have been severed in that way except with considerable force. He saw nothing in the part of the tongue inconsistent with the account of Mr. Hill. It was desirable that the tongue should be held in an operation of that sort, and it was not the custom to have a skilled assistant. He had seen the horse that morning; it was in a good condition. It was an old animal—over twelve years old. He saw no trace of cancer in the piece of tongue. Mr. Hill had a good reputation in the profession, not only as a practitioner, but a distinguished writer. In severing the tongue, two vessels, with their ramifications and extensions, would be also severed. He would rather not account for the absence of blood.

Cross-examined—The ulceration was half-an-inch thick through the tongue. The upper part was sound, and he would have expected the sound part to have bled.

The Judge—Professor Hill tells us there was no bleeding; can you account for it?

Witness—I prefer not to attempt to account for it.

The Judge—I think if you have a theory you should tell us.

Witness—I cannot account for it not bleeding.

The Judge—You saw no sign of cancer?

Witness—No.

Mr. Lamb—Did Mr. Hill suggest anything about ulcer?

Witness—I don't recollect him doing so.

Re-examined—The present improvement in the condition of the horse was a natural sequel to the removal of the portion of diseased tongue.

Mr. Hill, re-called, said—I did not say, "My God, you have pulled the horse's tongue out; it will bleed to death." I don't use my Maker's name in vain. The defendant does, but I do not.

Professor Pritchard, President of the Royal College of Veterinary Surgeons, Member of Council, and Examiner in Anatomy, gave similar evidence. Even in a healthy tongue being severed he would not expect to find much bleeding. The vessels of the tongue when stretched or torn would curl backwards. Professor Pritchard also gave evidence as to the necessity of getting some one to hold the tongue during the time the teeth were being rasped, and said that it would have been almost impossible to pull the tongue out in the manner described if it was in a healthy condition.

The Judge—It was not necessary to have a skilled assistant to hold the tongue. A groom usually did it.

George Fordham, M.R.C.V.S., veterinary surgeon from Willesborough, near Ashford, also corroborated, and said that if the tongue was in a normal condition it would have been impossible to detach the portion in the manner stated. The vessels would most likely be sealed by pus, which would account for the absence of hæmorrhage.

The Judge—A tongue in a normal state could not be torn away without very great force; he doubted whether a man could pull a horse's tongue out if he tried. He had seen the horse, and considered that before losing his tongue he was worth £40.

By Mr. Lamb—He would not be surprised to hear that £180 was given for the horse, as an officer's charger, a few years ago. People often gave fabulous prices.

Edward Hollingham, M.R.C.V.S., and Inspector of the South-Eastern Counties district under the Contagious Diseases Act, also gave evidence, and said the horse was better without the diseased tongue than with it. It was impossible in his opinion to pull a healthy tongue in two. It was not necessary to employ a skilled assistant to hold the tongue.

Robert James Barton, M.R.C.V.S., veterinary surgeon, of Eastbourne, also gave expert evidence on behalf of the plaintiff. He considered it was impossible to detach a healthy tongue in the manner described; the animal would bleed to death. He agreed entirely with Mr. Hill's method of operating.

By Mr. Lamb—Had never heard of a healthy horse's tongue being pulled in two without hæmorrhage. Its diseased condition was quite sufficient to account for the absence of bleeding.

This completed the case for the plaintiff. Mr. Lamb then proceeded to address the court for the defence, and reviewed the evidence he intended to call. He submitted that with the exception of a little inflammation the tongue was healthy, and that great and unnecessary violence must have been used to have pulled out the tongue. Plaintiff should have brought an assistant with him to hold it, or he should have given proper instructions to the man who was holding the tongue as to how he was to hold it. The horse threw up his head whilst Mr. Hill's back was turned, and in consequence of the way in which the tongue was held it came off.

General Patton Bethune, the defendant, was then called, and as soon as he got in the box he made a statement to the effect that Mr. Hill had declared the horse's disease to be cancer, and that when he found that would not do he had a meeting of all the veterinary surgeons round to get them to say it was ulceration. He thought that he was not to be believed. In answer to Mr. Lamb, defendant deposed that the horse in question was his property. It was his son's first charger in the 7th Hussars, and witness bought it from him. It was in fairly good condition in December, 1886, and in consequence of it having a swollen tongue he called in Mr. Hill to attend to it. Later on he sent for Mr. Hill to rasp the teeth, as they were uneven. He afterwards learnt from Mr. Hill that part of the horse's tongue had come off during the operation. Mr. Hill brought the piece of tongue, and said, "It's

a good thing it did not fall off on the parade when your daughter was behind it." Witness said, "Yes! I should think it was." He afterwards sent the horse and tongue to Mr. Mannington, a veterinary surgeon, and he told him that Mr. Woodruffe Hill had treated the case wrongly. In consequence of that he told the plaintiff to discontinue his visits. He met him on the parade one day, and plaintiff was very insolent to him, and said "he should make me prove it, and all that sort of thing, you know, and really I thought the man was going to strike me." (Laughter.) He claimed £7 15s. 6d. for attendance on the horse and medicine, £30 for depreciation, and £12 for losing the use of the horse.

Mr. Langham then proceeded to cross-examine the defendant, who said that when Mr. Hill showed him the piece of tongue, the severed end was cut straight as if with a knife.

Asked to whom the horse belonged, the General replied, "Oh, sometimes he is mine and sometimes my son's; we change about, don't you know?" (Laughter.)

Cross-examined—He believed the tongue was jagged when pulled out, but that Mr. Hill had cut off a piece and made it square, before showing it to him (witness). It was a clean cut and "straight as an arrow." He might be mistaken, as it all happened two years ago. He remembered Mr. Hill bringing the piece of tongue to his house and pointing out the ulcerated portion, and also describing why no hæmorrhage had taken place.

The Defendant, whilst being severely cross-questioned by Mr. Langham, said, to the amusement of the court, "Don't you browbeat me, I've never been put down yet." Later on the witness said to the same learned gentleman, after the latter had been interrogating him very keenly, "I think you are giving yourself a lot of unnecessary trouble about the matter," to which Mr. Langham replied, "Oh, pray don't mention it, please."

The Defendant—"You might just as well save yourself the trouble of asking me all these questions."

The witness denied that he had ever shown Mr. Woodruffe Hill a bit which he had to use for the horse. Mr. Hill did not say it was an instrument of torture. It was not necessary to use a powerful bit for the horse. He considered Mr. Hill was thoroughly incompetent, but he might have recommended him a short time since to Mr. Barlow Webb. He would not say he had not, but you know it's all two years ago. (Laughter.)

Dr. David Black deposed to having examined the piece of tongue, sent to him for the purpose, microscopically. He made sections of it, and found no trace of disease. He looked at the edge, which appeared to be rather jagged. He thought there had been no ulceration in the tongue.

By Mr. Langham—He was not a veterinary surgeon. The piece of tongue was in a good state of preservation in methylated spirits. The tongue might have been cut square with a knife. There were no signs of ulceration where he examined it, nor were there any signs of infiltration. The tongue appeared to have been cut: it looked more like a cut than a tear. The piece submitted to him only measured 2½ inches. He kept the tongue for some months, and then destroyed it. He could not have said what animal the tongue came from if he had not been told. It was not a human tongue—it was too large for that.

A veterinary surgeon named Morton, who was formerly engaged as assistant by Mr. Mannington, but who has now taken that gentleman's business, was next put in the box. He deposed that in 1886 the horse was sent to Mr. Mannington for treatment. The tongue was also sent; it was in a perfectly healthy condition. He sent the tongue to Mr. Black. He saw no trace of ulceration in the remainder of the horse's tongue. The end of the tongue looked as if it had been torn out with a rope.

By Mr. Langham—It might have been cut square with a knife. The stump end of the tongue in the mouth was jagged, not like the detached piece. The teeth of a horse could be rasped without the tongue being held, by the file being put into the mouth. He had filed the teeth of three horses in the last fortnight without having the tongue held. He had never seen any other veterinary surgeons do it, and could not give the name of any member of the profession that did it besides himself. He had gained his experience at Wolverhampton. He did not know himself of a horse's tongue in a healthy condition being pulled out. When he rasped a horse's teeth he always told the man who held the tongue to let go if the horse threw his head up. Professor Axe made morbid anatomy his special study, and was one of the first men in the profession; but supposing he did hear that the Professor had seen the tongue some time before him and declared it was ulcerated, he should stick to his opinion. The piece of tongue he had was about two and a half or three inches long. He thought that the whole tongue would not be more than eight inches long.

Mr. Langham—I put it to you: would it not be quite fifteen inches long? Remember you've seen the horse.

Witness—No, it would not be as long as that. The piece sent to Mr. Mannington was a third of the whole tongue. The length of the free portion of a horse's tongue, from the tip to the frænum, would be two inches.

Mr. Langham—Then a full-sized horse's tongue would be under or about eight inches?—Yes.

Mr. Langham—Does not a colt's tongue measure more than eight inches or a recently born foal?—It might.

William Williams, groom to the defendant, gave evidence as to the horse's tongue coming off in the yard. The man who was holding it was a gentleman's servant in the yard—a groom. His name was Henry, but witness knew neither his surname nor the name of his master. Witness held the twitch and the horse's ear. While Mr. Hill went to wet his file the horse threw his head up and nearly pulled witness off his feet; the other man was taller, and he did not get pulled up. When the plaintiff saw the tongue he said, "A nice thing you've done; you've pulled the horse's tongue out!" Plaintiff said that the tongue was diseased with cancer.

By Mr. Langham—He did not give the other man anything, nor did he treat him at all. Soft food was ordered the horse by Mr. Hill. About a pint of blood came out of the horse's mouth afterwards. Though witness's hand was close to the mouth none came on his hand, because he had taken the twitch off. The witness caused great laughter by constantly replying to Mr. Langham's numerous questions, "No, not to my knowledge."

By the Judge—I was holding the twitch when the horse put up its head, and the animal pulled me right up. Mr. Hill said to the man, "You've done a pretty thing; you've pulled out the horse's tongue." On looking at the tongue Mr. Hill said it was cancerous.

Florence Bethune, daughter of defendant, was called, and said Mr. Hill told her when he brought the tongue to the house that it was diseased.

His Honour, without calling upon Mr. Langham to reply, in giving judgment, said he could not see that there was any negligence on the part of the plaintiff, for he considered the pulling of the horse's tongue out an accident, although it was a most extraordinary accident, as all the witnesses had said. The surgeon had not got hold of the tongue when it came out, but a man who was called by the defendant's groom. There was no evidence to prove negligence on the part of the plaintiff, who was an eminent member of his profession, and the items of the plaintiff's bill had been proved to be correct and proper. The operation was an ordinary one, and it was the usual thing

for some one to hold the horse's tongue while it was being done. It appeared, too, that this did not require any special experience. The groom told them that the man who held the tongue was the groom of a gentleman, and as such he might be considered to have a knowledge of horses. Judgment would be given for the plaintiff, Mr. Woodruffe Hill, on both claims, with costs in both cases.

The result was received with applause.

Considerable amusement was occasioned after the verdict by the General being under the impression he had won the case.

Notes and News.

ROYAL ACADEMY OF SCIENCES OF TURIN.—This learned body gives notice that from the 1st of January, 1887, the new term for competition for the seventh Bressa Prize has begun, to which, according to the testator's will, scientific men and inventors of all nations will be admitted. A prize will therefore be given to the scientific author or inventor, whatever be his nationality, who, during the years 1887-90, "according to the judgment of the Royal Academy of Sciences of Turin, shall have made the most important and useful discovery, or published the most valuable work on physical and experimental science, natural history, mathematics, chemistry, physiology and pathology, as well as geology, history, geography and statistics." The term will be closed at the end of December, 1890. The value of the prize amounts to 12,000 Italian lire.

THE TZE-TZE FLY AND MAN.—All who have read works of travel in Central Africa must be aware that the country is infested with the tze-t ze fly, the bite of which insect is fatal to beasts of burden. Hence, amongst many tribes men ride on the backs of their slaves for lack of horses, a custom which, according to Sir Richard Burton, accounts for the tale of Sindbad and the Old Man of the Sea. That the tze-tze is a grave impediment to efficacious transport in Equatorial Africa has long been known. The question as to whether it is noxious to man is much disputed. Father Leroy, a Catholic missionary, has recently been enabled to forward a number of specimens of the fly to M. A. Laboulbène, who is about to make a series of inoculations, together with Professor Straus, in order to investigate the nature of its poison. In making his way towards Zanzibar, Father Leroy crossed a barren plain, where buffaloes, zebras, giraffes, and antelopes abounded. From sunrise to sunset the tze-tze let him have no rest. After receiving 200 bites, he began to suffer from a disease which he likened to Urticaria; it lasted two days. During a previous expedition he suffered from the same affection, and, as the itching was intense at night, preventing all sleep, and the fly attacked him all night, the reverend missionary must have suffered fearful discomfort and much consequent exhaustion. Shortly before the passage of the caravan with which he travelled on his second journey, a warlike tribe had encamped on the desert plain with 300 oxen. The neighbouring tribes, on the alert, suddenly lost sight of the enemy. It transpired that the tze-tze fly had worried the oxen so that the aggressors had to retreat. M. Laboulbène considers, in a communication recently made to the Académie de Médecine, that Father Leroy's evidence proves that the tze-tze's bite cannot be venomous to man. Whilst it is known to kill cattle, and in this case scattered a large herd, a human being bore 200 bites with no other result than a kind of Urticaria, such as frequently follows the bite of small flies in

Europe. There is no proof that the poison of the tze-tze is simply conveyed to cattle and horses from carrion.

FIVE LAMBS AT A BIRTH.—"J. B." writes as follows to the *Mark Lane Express*:—"On Lord Emlyn's House Farm, in the year 1878, a Cardiganshire ewe dropped five lambs, three black and two white, all of which were reared, the ewe rearing three entirely herself. The lambs were got by a Shropshire lamb."

FACTS AND FANCIES.—It is amusing sometimes to observe the extent to which clever people's fancies will carry them. In the British Army during 1887 there was not a case of Glanders, yet the Allahabad *Pioneer* has the following interesting notice from the pen of its London correspondent, under date of November 16th. The Chinese have a proverb which says that "A lie has no legs, and therefore cannot stand; but that it has wings and can fly." It is a good flight from London to Bengal:—"It is a startling thing to learn on the authority of the *Veterinary Record* that the army lost, by Glanders and Farcy last year, no less than 1,445 horses—equivalent to one-eighth of the whole number. If the disease is of such proportions under military regulations, what must it be in private stables, and where the animals are not so well looked after, and the chances of infection are vastly greater. Surely here is scope for the genius of a Pasteur. The number of remounts purchased in 1887 was 1,343. The loss from one cause alone was 102 in excess of the new importations. Putting the value of the horses lost at the modest figure of £12 each, it represents a sum of £17,340, which, in the opinion of men competent to judge, might at least in great part be saved to the country. Why should not Glanders be as effectually stamped out as Small-pox? The difficulty of detecting the disease is no doubt great sometimes, but with horses one could deal with doubtful cases in a manner that would be impossible of adoption with the human animal. If the loss in army horses was so great, it would be interesting to learn what a large private institution loses under the same heading. The London General Omnibus Company own pretty nearly as many horses as are kept for army purposes. Their experience would be instructive. If the disease is as common with this Company's animals as, according to the *Veterinary Record*, it is in the army, it calls for national action. But if, on the contrary, there is less loss with them, then our military veterinary surgeons must have something to learn, or the rules and regulations are evidently defective somewhere."

BUFFALO BREEDING.—The last year of the great buffalo herds in the Canadian North-west was 1878. During that summer the great plains of the Saskatchewan were dotted and darkened with buffalo herds for hundreds of miles, and in the words of a recent correspondent of this paper the country was "one robe." Of course the hunters of all kinds repaired thither from all regions, and the slaughter was great. The supply of robes then sent to Winnipeg is hardly yet exhausted. One band of Indians, returning to that city laden with spoil, drove in five buffalo calves. For four years these buffaloes were allowed to ramble about in company with the ordinary cattle of the vicinity, until 1882, when the whole herd, now numbering twenty-three, including hybrids with the domestic cattle, were sold to Mr. Samuel Bedson, at Winnipeg, who set about endeavouring to supply a ranch animal that was better adapted to withstand the rigors of the climate and scarcity of food than the common neat cattle. The domestic animal is liable to great mortality from drought, frost, snow, starvation, disease, stampede, and to some extent from wild beasts. Its flesh is certainly of the highest grade, but its hide is not worth more than a couple of dollars. The buffalo's characteristic disadvantages are the comparative inferiority of its flesh, the great size of

the fore-quarters and the slightness of the hind-quarters. On the other hand, all records, and all Mr. Bedson's experience, go to show that the buffalo enjoys complete immunity from all disease, and in winter and summer it can feed itself on the prairie grasses even when it has to dig for them through a couple of feet of snow. Again, the hide is worth from ten to fifteen dollars. Once a year the buffalo sheds its fleece, scraping it off in great flakes against bushes and trees. This is easily gathered and readily worked up into a yarn that will compare favourably with that produced by the inferior breeds of sheep. Each animal yields from ten to twelve pounds of the raw material. The buffalo is greatly inferior as a milker to its domesticated relative, but as a draught animal it is stronger, quicker, and more enduring. It is a remarkable fact that the buffalo and Bos taurus are interfertile in all degrees of hybridity. As a result of crossing, Mr. Bedson has succeeded in producing an animal which in a great measure unites the best qualities of both species. It is of nearly the same shape as the common steer and therefore much better for beef, and is invested with a robe of long soft glossy fur which is almost even in length all over the animal, and varied in shade from light-brown through brindle to pure black. It is also improved as a milker. It retains the hardiness of its wild progenitor, and altogether gives good promise of being the ranch beast of the future.

VETERINARY HONOUR.—The *Irish Sportsman* makes the following announcement:—Mr. Thomas H. Simcocks, V.S.—This well-known and popular gentleman, Fellow and Senior Vice-president of the Royal College of Veterinary Surgeons, has just been appointed by the Lord Lieutenant to the important office of high sheriff for the town of Drogheda.

AUSTRALIAN SHEEP.—Under the heading, "The First Sheep in Australia," *Colman's Rural World* has the following: In 1797 three Merino rams and five ewes were carried there, but so slow was the introduction of the production of wool into these colonies that it was not till 1807, ten years later, that the first bale of wool was carried from Australia to England. But the flocks of Australia did not originate from that source. The development of fine wool husbandry in these colonies was the result of an accident. Some English whalers captured in the South Seas, about the beginning of the present century, a vessel proceeding to Peru from Spain in which there were 300 Merino rams and ewes. These sheep were carried to Australia, and originated the fine Merino wool whose production is now sold in a special market at London, to which all the manufacturers of the world resort.

A VALUABLE RACE OF COWS.—The Holstein Fresian cattle continue to attract great attention in America, the yields of milk and butter which the breed has attained there being quite surprising. One cow has reached the astounding yield of 30,000 lbs. of milk in a year. Another cow has reached 28 lbs. of butter in a week, while 17 or 18 lbs. appears to be quite common. It is said that the breed is as hardy as the American scrub, has no hereditary tendency to disease of any kind, and is peculiarly plastic in its adaptations. In this connection it is significant that Mr. Peppin's pure Holstein cow won both the milk and butter test at the National Society's late show.

A PROLIFIC EWE.—An extraordinary case of prolific lambing has lately occurred at Knott Oak Farm, Ilminster, Somerset, where a Dorset Horn ewe, purchased at the last Dorchester Pounbury fair from Mr. W. Mayo, Friar Waddon, Dorchester, by Mr. Paull, has given birth to no less than five lambs, four of which were born alive and still survive. This is another instance of the great fecundity of the Dorset Horn breed, and is a valuable testimony to their worth for breeding purposes. Mr. Mayo's has long been recognised as one of the best flocks in Dorset.

EXECUTION OF VICIOUS ELEPHANTS.—A curious execution has been accomplished at Philadelphia—the putting to death of the famous elephant known as Chief, and owned by Mr. Forepaugh, circus proprietor. The elephant was very large and exceedingly vicious, having killed seven men during the nine years he has been in America. He was about forty years old. The killing of the animal was effected in an ingenious manner. He was so vicious that it required the greatest caution to get near him; but after much effort a noose was slipped about his neck, the ends being left long. These ends were then fastened to two other elephants, one being placed each side of Chief, who was heavily chained so that he could not move. When the ropes were prepared young Adam Forepaugh gave the word, and the two side elephants were suddenly prodded with iron. This caused them both to pull away from Chief in opposite directions, and in twenty seconds the huge pachyderm fell dead, strangled. Another large and vicious elephant is shortly to be killed. This animal is about twenty-five years of age, and like the other, Chief, has a record for killing his keepers. He has now become so dangerous that no one dares go near him. His exit is to be made to serve the ends of science, by being made the test for the new system of death by electricity. All criminals in New York State who are condemned to death are to be killed by electricity, and it is this system which is to be tried first on the great elephant. Mr. Thomas Edison, Professor Doremus, and Elbridge T. Gerry, the latter the president of the New York Society for the Prevention of Cruelty to Animals, have been experimenting this week at Edison's laboratory, to discover what amount of electric current is necessary to cause instant death. Their next experiment will be on the fierce brute at Robinson's Circus.

AN INVASION OF SHEEP.—The statement is made in an American paper that "vast flocks of sheep are reported to be overrunning the country in San Miguel, Valencia, and Bernalillo counties, New Mexico, having been driven from Western New Mexico owing to the scarcity of water and grass in that section of the territory. Two hundred thousand head are now at Trinchera Lake, in the vicinity of Pinos Wells, and at Fort Sumner 130,000 head are drinking dry all the watering-places."

DEPREDATION BY WOLVES IN AMERICA.—The statement is made in the *Times*, Deadwood, Dakota, that "Green Todd, from the Bear Lodge country, reports great devastation among colts by wolves. Out of a drop of one hundred he has only forty left. He killed three wolves, including the most ferocious one, and that had done most damage. Reports from Montana ranges indicate great loss also by wolves."

GIGANTIC SHEEP.—There is an extraordinary race of sheep—the biggest in the world—which has its habitat on the Alai range, in the extreme south-east corner of Turkestan. It is the great mountain sheep of the Pamir plateau—the *Ovis poli* of Marco Polo. The *Ovis poli*, we read, is an animal 12½ hands high, with a head and horns which are the envy and despair of all the hunters of Asia. Magnificent indeed are the curved and involuted horns, measuring at least five feet between the tips, but each horn measured from the base along the curves is six feet long. This huge sheep lives in the most inaccessible corner of the most mountainous region in all Turkestan, just to the north of the great Pamir plateau, the first of the gigantic series of mountains that form the northern bulwark of India.

THE ORIGIN OF TETANUS.—At a recent meeting of the Académie de Médecine, of Paris, M. Guérin spoke on the origin of Tetanus. He said that modern researches inclined to prove that the disease was infectious and transmissible. This doctrine had a warm partisan in M. Verneuil, and he himself was ready to adopt the same opinion. The fact that Tetanus is

inoculable has been placed beyond doubt by the works of Rosenbach, Colin, Carle, etc., but the agents of the inoculation were not yet clearly defined. According to the several autopsies he had made in such cases, he was led to believe that the agent of infection should be sought for in the partial myelitis which is generally present. Were those agents micro-organisms, the simple subtraction of other patients from the *foyer* of infection would suffice; and yet it was far from being so. In any case, he had witnessed a transmission of Tetanus in spite of every antiseptic precaution. Consequently, he was disposed to consider that the malady is engendered by a poison similar to the virus of a dissecting wound, or perhaps to that of Rabies, which is inoculable, but not transmissible by the surrounding atmosphere.

POISONOUS BLOOD.—M. Mosso, of Turin, having carried out a series of experiments with the blood of eels, finds that it possesses markedly poisonous properties. Even to the tongue it has an insupportable acidity, and a very small quantity of the serum is sufficient to kill a dog. Half a cubic centimetre injected beneath the skin of a dog weighing thirty-five pounds killed it in four minutes. At this rate, an eel weighing five pounds would contain enough poison to despatch ten men. The blood of animals thus poisoned cannot be made to coagulate, just as after the bite of serpents. Fortunately, the blood is inert when introduced *viâ* the stomach, and it loses its toxic properties when heated.

Correspondence.

HEREDITY IN DISEASE.

SIR,—In Mr. Hunting's paper on "Heredity—Its Influence on Conformation and Disease," Splints were referred to. "Nearly all our horses show them; that no indigenous breed in a new country does until crossed with European horses."

I would like to state that I have detected Splints in "well bred" Syrian and Delta Arabs; in fact, they are not uncommon. If accepting Mr. Hunting's view, I must conclude that all these Arabs have a touch of European blood, or I must think that horses, other than those crossed with European ancestors, can have Splints. I incline to the latter.

In speaking of "*Roarers*," Mr. Rutherford stated that "the disease is unknown among Arab horses." I have recently detected "Whistling" in *two* and Roaring in *three* cases, but do not think it common among Arab horses.

Cairo, December 24th. WILLIAM LITTLEWOOD, M.R.C.V.S.

PARTURIENT APOPLEXY.

SIR,—Some time ago we had Major-General Brown upbraiding us for the plentiful lack of knowledge that characterised us of diseases in general and of Tetanus in particular. The same gentleman, by the way, has recently been claiming, in a penny agricultural paper, that he is the discoverer of the therapeutic value of calomel in Thrush. Surely he might sing, with that other distinguished officer in the "Pirates of Penzance"—

> "I am the very pattern of a modern Major-General;
> I've information vegetable, animal, and mineral."

In last month's Journal, however, the Major-General, who seems to have doctored no animal but his own, is quite surpassed, for in that issue we have a pleasing account of part of the symptoms and *post-mortem* appearances of several cases of Parturient Apoplexy, treated by an M.B., C.M., B.Sc., etc.;

at least, as no veterinary surgeon's name is mentioned, it is to be presumed that the treatment was carried out by the gentleman who records the cases. If these cattle did belong to Mr. Thomas, he, in becoming his own veterinarian, has taken on the character of the man who became his own lawyer.

We have no indication as to how the creatures were treated, except, indeed, that we read at the end of the communication that "there is no remedy against Septicæmia."

If Mr. Thomas will employ a good veterinarian, of whom there are plenty around Preston, to treat the next four cases, I have not the slightest doubt but that he will find that there is a remedy against Parturient Apoplexy. Mr. Thomas speaks of this as a febrile disease, but he does not seem to have used his thermometer. Had he done so, it would have been evident to him that there is no fever connected with the malady. It is rather against evidence to talk of this disease being due to insanitary surroundings, untrapped drains, etc. I believe that the "shippons" on the small farms in this part of the country are the filthiest in the world, and Milk Fever is almost unknown among them; but it is by no means infrequent in well-managed dairy farms, and among the dairy cattle of gentlemen and those of public institutions where the sanitary arrangements are all that can be wished.

I think that—

(1) The absence of rise in temperature,
(2) The fact that the disease never appears till after the second calf,
(3) That it only attacks plethoric cows or deep milkers,
(4) That the presence of putrid fœtal membranes in the uterus fails to induce the disease,

are sufficient to justify us in concluding that Mr. Thomas is wrong in considering Milk Fever to be a form of Septicæmia.

WM. R. DAVIS.

Douglas, Isle of Man.

"HIPPACEA."

SIR,—Kindly allow me space to reply to "J. Nettelton's" letter under this heading in your issue for November. That communication is certainly suggestive of "tactics," a prominent one being the gratuitous advertisement "J. N." gives of himself as a "follower of Lister." It is a pity, however, that he has made such a gross mis-statement as to assert that £7 worth of "Hippacea and other quack nostrums" were sent by this company to a chemist in his town on "sale or return." I challenge him to prove this assertion. This "follower of Lister" did not hesitate to receive, apparently gladly, a free tin of "Hippacea" from my representative, which I understood he promised to try and report on, and in the ordinary course of business the following letter was addressed to

"Mr. Nettelton, M.R.C.V.S., Northallerton.

"Dear Sir,—Dr. Seelig writes us that he left with you a sample tin of 'Hippacea' for use. We shall be very glad to receive a few lines from you as to any note you may have made of its effect upon the trial case.—Yours, &c."

Whether there are any "tactics" in this proceeding that the members of the profession will be grateful to their champion for being "warned" against, I leave to them to determine, and will merely assert, in the strongest manner possible, that the company under my management has no "tactics" beyond bringing in a straightforward and perfectly legitimate manner to the notice of the profession a preparation that their brethren have found exceptionally valuable, and giving them the opportunity of testing its properties for themselves, and then, if they wish to do so, say what they think of it.

Mr. Nettelton has quoted the direct testimony of two gentlemen, both perfectly qualified and able to "see" and "reconcile" what your correspondent admits being incapable of doing. He has not evidently tried what he affects to denounce as "such stuff." I will not insult your liberal readers by supposing that they will not accept the direct statements of fact resulting from actual experiments, as vouched for by their professional *confrères*, rather than the "warning" of J. Nettelton, the strength of whose case rests solely on the admissions, "I suppose," "I fail to see."

I repeat that I shall be glad to send any veterinary surgeon a free tin of "Hippacea" if he will write for it, and judge for himself of the value or otherwise of the preparation that has received such unqualified endorsement by such members of the profession as Mr. Nettelton has the temerity to taunt as, "Not followers of Lister."

For Henry's Great Indian Remedies, Limited,

December 27th. F. H. BOWDEN,

Managing Director.

THE NATIONAL VETERINARY ASSOCIATION.

DEAR SIR,—May I trouble you to kindly insert the following facts respecting the correspondence that has recently taken place between Messrs. Hurndall and Simpson and myself?

As Messrs. Hurndall and Simpson do not think fit to give me those generous and straightforward answers I asked for, we may presume, firstly, that Mr. Hurndall received *all* the necessary information upon which he founds his "grievances" from Mr. James Simpson; secondly, that such information was received by Mr. Hurndall *before* he wrote his letter in the *Veterinary Record* of October 27th, and therefore quite independently of Mr. Hunting's report of the first meeting of the Provisional Committee in the *Veterinary Record* of October 20th; thirdly, that Mr. James Simpson not only gave the information he publishes in the *Veterinary Record* of December 8th, but also *every particle* of information which Mr. Hurndall has published in reference to this matter, and, as a matter of fact, *no other source of information was open to him.*

With your permission, Mr. Editor, we will now give your readers the "generous explanation" which Mr. Simpson says he has so long watched for.

Mr. Hurndall asks in the *Veterinary Record* of October 27th:

1. How it happened that he was not elected on the Provisional Committee?

Answer. Because he was not elected by the President and Vice-Presidents for 1889.

2. Has some new departure been made this year?

Answer. No.

3. Is it a case of another ring being formed?

Answer. No; for "rings" are unknown in the National Veterinary Association—at least, to the Secretary.

4. Is it negligence on the part of the Secretary?

Answer. If this refers to Mr. Hurndall not being elected on the Provisional Committee, the answer to his first question is sufficient.

5. Has any other member of the profession been left out in the cold?

Answer. If this also refers to those *not* elected on the Provisional Committee, we may take it for granted that everybody (except those on that Committee) is "left out in the cold" in Mr. Hurndall's opinion.

In the *Veterinary Record* of November 10th, Mr. Hurndall asks:

6. Who elected the Provisional Committee?

Answer. The President and Vice-President for 1889, appointed to do so by the Council at Newcastle.

7. Who are the members of that Committee?

1. Professor Axe.
2. Mr. A. Broad.
3. Mr. J. R. Cox.
4. Mr. W. Duguid.
5. Dr. G. Fleming.
6. Mr. W. Hunting.
7. Mr. H. Kidd.
8. Mr. G. Lepper.
9. Mr. H. Lepper.
10. Professor J. Macqueen.
11. Mr. T. Moore.
12. Mr. W. J. Mulvey.
13. Mr. F. Oatway.
14. Professor Penberthy.
15. Mr. F. Raymond.
16. Mr. J. Rowe.
17. Mr. F. G. Samson.
18. Sir H. Simpson.
19. Mr. J. Simpson.
20. Mr. C. Sheather.
21. Mr. S. Villar.
22. Mr. J. P. S. Walker.
23. Mr. A. Wheatley.
24. Mr. J. Woodger.

Ex-officio.—Professors W. Pritchard and Williams, and Messrs. F. W. Wragg and Banham.

8. How it was that Mr. Edgar and Mr. Hurndall were not allowed to take part in the election of the Provisional Committee?

Answer. Because neither of these gentlemen was appointed to officiate in that capacity by the Council.

In the *Veterinary Record* of December 1st, Mr. Hurndall quotes Rule 53 as follows: "The Provisional Committee shall be elected directly or indirectly by the Council from among the members of the Association living in the neighbourhood of the place appointed for the next general meeting;" and asks—

9. Was this done in the present instance and the rule duly observed?

Answer. The Provisional Committee was elected *indirectly* by the Council, as they appointed the President and Vice-Presidents for 1889 to do so, because these gentlemen would know better who to elect than they did themselves.

That they were elected from the neighbourhood of the metropolis, as much as the Committee of 1883 which managed the last meeting held in London was, may be seen by comparing this year's list with that published at page 11 of "The First Year's Proceedings of the N.V.A." Therefore I think we may truthfully say that the rule has been as duly observed this year as it has ever been since the foundation of the Association, and that "the gentleman" (Mr. J. Simpson) who advised Mr. Hurndall to the contrary *is wrong*.

Then Mr. Hurndall says, in the *Veterinary Record* of December 1st, that the meeting which elected this Provisional Committee "was called (not by the General Secretary, as one would suppose), but by another officer." Surely, sir, this is rather like a man wrangling with his own shadow for the sake of quarrelling with something, and is not worthy of further comment here.

In the next paragraph he says he is "informed on high authority (Mr. James Simpson) that though the President-Elect (Prof. Pritchard) was at the meeting, the President (Prof. Williams) was never consulted as to the calling such a meeting, nor was he ever advised that it was to be held, consequently he was not present."

In answer to this, we would remind Messrs. Hurndall and Simpson that we have yet to learn that it was our *duty* to advise the President of 1888 concerning this matter, the Council having deputed the President and Vice-Presidents for 1889 to perform this duty; so here again Mr. Hurndall was erroneously advised by Mr. Simpson as to the meeting being "informal and irregular."

Mr. Hurndall was told (by Mr. James Simpson, of course) that thirty gentle-

men were elected to serve on the Provisional Committee. It is quite true that thirty names were proposed and seconded, but Mr. Simpson was not frank enough to tell Mr. Hurndall that six of them were to be left as reserve men, if only twenty-four could be elected. The Secretary did not quite understand which of the thirty names proposed should be the reserve, so he thought the easiest way to find this out was for each of the electors (the President and Vice-Presidents for 1889) to run his pen through six names on a list of the thirty sent to him; and this method proved a very convenient and successful one, for nearly all (Mr. J. Simpson excepted) chose the same names to be put on the reserve. Neither was there anything very "novel" in this procedure, as similar methods have been resorted to before. Moreover, it was hardly worth troubling these gentlemen (who volunteer this work) to meet again for such a trivial purpose.

Mr. Hurndall impertinently asks, "Should not the Secretary have known the proper number in the first instance?"

Answer. The Secretary did inform the meeting and Mr. Simpson that twenty-four was the number to be elected, but he could not say decidedly whether any more *could* be elected or not.

Mr. Hurndall goes on to say that if it is correct that the Provisional Committee have been elected by the President and Vice-Presidents of the coming year, "Mr. Benham is convicted on his own confession of serious irregularity, for as General Secretary it surely is his duty to see that the rules are strictly observed and not infringed."

Answer. This confession is no conviction, for the Council did *indirectly elect the Provisional Committee*, since they deputed the President and Vice-Presidents of 1889 to do so; and, therefore, no rule has been infringed; and the same manner of election has taken place ever since the commencement of the Association.

Mr. Hurndall also finds fault with the election of members on the Provisional Committee residing in localities many miles distant from the metropolis, instead of being members of the Association living in the neighbourhood of the place appointed for the next general meeting; and he says, "no stretch of imagination can bring them within the scope of Rule 53; therefore this is a breach of that rule."

Answer. Mr. Hurndall is himself answerable for this, since he confesses it was mainly through his and Mr. Edgar's resolution at Newcastle, that the next general meeting was transferred from Reading to London. But neither he nor Mr. Edgar put a resolution to reject the invitation of the Royal Counties Society, and *we are still holding the* 1889 *meeting in the South, at that Society's invitation.* Therefore, it was only fair and complimentary to that Society for the electors of the Provisional Committee to appoint some of the members of the R.C.V.M.S. to act as the Provisional Committee. Moreover, I may say that Mr. James Simpson was a party to their election; and it shows very bad taste, if not bad judgment and policy on his part, to advise Mr. Hurndall to find fault with their election, especially as he is one of them himself. Mr. Hurndall will now perhaps be able to allow his imagination to bring these gentlemen within the scope of Rule 53.

Mr. Hurndall's remark and suggestion of "an undeniable slight to a number of metropolitan practitioners *who are members* of the Association," may therefore be laid at the door of his informant of high authority (Mr. James Simpson, Vice-President of the N.V.A. for 1889), more than to anybody else (not that we believe for one moment that any of the metropolitan practitioners consider themselves at all slighted).

Mr. James Simpson then comes to Mr. Hurndall's rescue, with a note from his own pen in the *Veterinary Record* of December 8th (which, by-the-bye, the Editor considered important enough to be given in large type), repeating

all Mr. Hurndall had told us, and *a little more;* this little being that I had neglected to answer his letter of September 18th. My reason for not doing so was because his letter was not couched in language that is likely to be answered by me at any time, and I am not a little surprised that Mr. Simpson should ever have thought I should reply to such a domineering epistle. Another reason was, that I refrained from entering into a correspondence with such a proverbially verbose and litigious person.

Mr. Simpson says "the violation of the rules of the N.V.A. and the abuses of its privileges are a source of wonder and regret to *all* its well-wishers." If this is *true*, it is somewhat remarkable that the Secretary of the Association has not heard of them. He is not aware that any rule has ever been violated to any considerable extent, and certainly *never to the detriment of the Association.* These spurious violations which Messrs. Hurndall and Simpson have taken so much trouble to call the attention of the profession to in public print, have, I trust, been satisfactorily and generously explained here; so that the "well-wishers" of the N.V.A. will be able to see what frivolous objections can be raised by a person who sets his vexed temper to do so.

We would urge the "well-wishers" of the N.V.A. to take no notice of Mr. James Simpson's fault-finding, since he has a little private enmity against the General Secretary, and has apparently used Mr. Hurndall as his "cat's-paw," on this occasion, to wage war against him. Finding Mr. Hurndall did not get on as well as he would wish, he enters the arena himself, and it was in anticipation of this that I originally asked Mr. Hurndall in my first letter to the *Veterinary Record* of November 3rd, to "state how, and in what way, he became acquainted with the information upon which he founds his conclusions" of October 27th. However, I consider it a *breach of confidence* on the part of Mr. James Simpson to divulge the business of a *a Committee* to anybody, especially to a gentleman whose name had been mentioned, but who was not finally elected on the Provisional Committee: not that his non-election was out of any disrespect (as Mr. Simpson would lead us to believe) to that gentleman, or to any of the other five (which Mr. Simpson has been comparatively silent about), but simply because we only required twenty-four. A Committee elected by the Council is responsible to that Council alone for their actions; and if Mr. Simpson or anybody else had a complaint to make, it should have been made *to the Council,* and not to the public through the press. These petty quibbles should not, in our opinion, appear in the press at all, especially matters of private moment of this kind. THEY DO THE PROFESSION NO GOOD.

When a member of the N.V.A. poses as a "well-wisher," and takes as much pains as Mr. Simpson has done to prove so little, it is about time we began to ask ourselves, Who are the "well-wishers" of the N.V.A.? Surely not the person who, 1st, votes at his local society to invite the Association to hold its general meeting in their midst, and then at the last hour changes his mind and votes in favour of another place; or who, 2nd, votes for the election of seven members to act on the Provisional Committee from his own locality, and then holds such elections up to ridicule, or incites another to do so; or who, 3rd, publishes the work of a Committee (of which he is a member) who are only responsible to the Council which elects them; and, finally, induces his brother to endeavour to make another "cat's-paw" (viz., by trying to persuade the ex-President to make another complaint), but who utterly fails in the attempt.

What does it all mean? Advancement of the N.V.A.? No, but *spite.*

GEORGE A. BANHAM,
Honorary General Secretary, N.V.A.

Downing Street, Cambridge.

ROBERTSON MEMORIAL FUND.

DEAR SIR,—At a meeting held in the Theatre of the Royal Veterinary College, in January, 1888, it was resolved to place in the Museum a bust to the memory of the late Principal.

In order to carry this into effect, a sum of £140 is required, and of this amount about £70 has already been subscribed.

Mr. Birch, A.R.A., has been deputed to execute the work.

The Committee will be pleased to receive a donation from any gentleman who studied under the late Professor Robertson, and has not already subscribed.

F. GREGORY, *Hon. Sec.*

Committee.

Professor AXE (*Hon. Treasurer*).
„ BROWN.
„ PENBERTHY.
„ SHAVE.
Mr. BYRNE.
„ H. MILWARD.
„ MARTIN.
„ JAMIESON.

Mr. F. GREGORY, *Hon. Sec.*

	s.	d.
Mr. G. H. Williams	10	6
„ Beanland	10	6
„ Gale	5	0
„ H. Milward	10	6
„ Hibbard	10	6
„ Nesling	5	0
Cobbledick	10	0
J. E. Abbott	10	6
Slipper	10	0
Emery	10	6
„ Tinkler	10	6
„ Johnson	5	0
„ Jacobs	10	6
„ Martin	10	6
„ Oliver	10	6
„ Ludlow	5	0
„ Bishop	5	0
„ Sugden	10	6
„ Cannon	5	0
„ Golledge	5	0
„ Reece	5	0
„ Barrett	10	6
Professor Shave	10	6
Mr. Callow	5	0
„ Pitchford	5	0
„ Stewart	10	0
„ Burrell	10	0
„ Batt	10	6
„ Allnutt	10	6
„ Bell	10	6
„ J. R. Cox	10	6
„ Bower	10	6
„ Blay	10	6
„ Nettleship	5	0
„ Upton	5	0
„ Moreland	10	0
„ Pethick	10	6
„ Sawtel	10	6
„ Shipley	10	6

	s.	d.
Mr. Cadd	10	6
„ McGilvery	10	6
„ T. A. Dollar	10	6
„ Hewitt	10	6
„ A. W. Stainton	10	6
„ A. Stainton	10	6
„ Gibbings	10	6
„ Hammond, Sen. ..	10	6
„ Hammond, Jun.	10	6
„ Elliott	5	0
„ H. Edgar	10	6
„ W. Edgar	10	6
Capt. Russell	10	6
Mr. Alcherley	10	6
„ J. A. W. Dollar	10	6
„ C. Sheather	10	6
„ S. Greaves	10	6
„ G. Banham	10	6
„ Almond	10	6
„ Salter	10	6
„ G. Williams	10	6
„ J. Williams	10	6
„ Galloway	10	6
„ Booth	10	6
„ Foot	8	6
„ S. J. Williams	10	0
„ Norwood	5	0
„ Gatwood	10	0
„ Groom	5	0
„ Willett	10	0
„ Head	5	0
„ Cranford	5	0
„ Briggs	10	6
„ Robinson	10	6
„ A. Robinson	10	6
„ Litt	10	6
„ W. Dollar	10	6
„ Welsby	10	6
„ C. Hunting	10	6

	s.	d.
Mr. C. S. Hunting	10	6
„ Flook	10	0
„ Stephenson	10	6
„ F. J. Harvey	10	0
„ Pettifer	10	6
„ H. Olver	10	6
„ Tayler	10	6
„ Morton	10	6
„ Beckford	10	6
„ Coveney	10	0
„ Price	10	6
„ Shipley	10	6
„ Hicks	10	6
„ Tooth	10	6
„ Summers	10	0
Professor McCall	10	6
Mr. Carter	10	0
„ Baker	10	6
„ Faulkener	10	6
„ Edwards	10	6
„ Moran	10	6
„ Galloway	10	6
Professor Brown	10	6
„ Penberthy ..	10	6
General Fitzwygram ..	10	6
Mr. D. Snowball	10	6
„ George Fleming	10	6
„ Rogers	10	6
„ Worthington	10	6
„ Hutton	10	6
„ Littlewood	10	6
Collected by Mr. Simpkins £5	18	0
Mr. Walpole	5	0
„ Doyle	5	0
„ Parsons	10	6
„ Gostling	10	6

	s.	d.
Mr. Scarlett	10	6
„ Rea	10	6
„ Stanley	10	6
„ Whygham	10	6
„ Samant	10	0
„ Abell	10	6
„ Anderton	10	0
„ Dawson	10	6
„ Porritt	5	0
„ Woolston	10	6
„ Johnes	5	0
„ Welch	10	6
„ Gregory	10	6
„ Stratton	10	0
„ James	10	6
„ Knowles	10	0
„ Varney	5	0
„ Hatton	10	0
„ Perry	10	6
„ Wentringham	10	6
„ Page	10	6
„ Perle	10	6
„ Slocock	10	6
„ Clapp	5	0
„ McGill	10	6
„ McCall	10	6
„ A. Smith	10	6
„ Walters	10	6
Professor Williams, for Students and Teachers of New Vet. College £7	7	0
Mr. Thompson	10	6
„ Simpkins	10	0
„ Savourneen	10	0
„ Melhuish	5	0

DISPENSING DRUGS TO QUACKS.

DEAR SIR,—I am led to understand that it is a common and growing practice for druggists to supply quacks with medicines of all kinds. In some cases when the so-called prescriptions are not readable I understand that a dose or doses are added. Please inform me if the Pharmacy Act prohibits such practices, and if so, who is the proper person to address on the subject.

"M.R.C.V.S."

[There is nothing in the Pharmacy Act of 1868 prohibiting a registered druggist from supplying farriers or any other persons with medicines, or making up their prescriptions.—ED. *V. J.*]

CORRECTIONS.

DEAR SIR,—I was very much surprised, when looking through THE VETERINARY JOURNAL for January, to find in the report of the veterinary medical meeting held at Leeds on October 26th, 1888, a paper which I was supposed to have written. I most certainly should not have allowed a paper of mine to be published containing so many mistakes, both in spelling and the totally different meaning of the words inserted in the Journal. Some

time ago I promised to read a paper, but found I had not time to write one, so I wrote and told the Secretary (Mr. Greenhalgh) that I would introduce for discussion "Some Diseases of the Bowels." I made a few rough notes, which, after I had opened the discussion, the reporter asked me to lend him, in order that he might make out a report for the Journal. I lent them, on condition that he let me read the report over before it was printed. I never received the report to correct, hence the many mistakes which, no doubt, all the readers of the Journal have found out—*e.g.*, "this afternoon subject of some diseases"; "elementary," alimentary; "Colic," colicky; "charge," charges; "bolted," or bolted; "had," she had; "pains," pain; "all," all the; "sympathetic," lymphatic; "these diseases," than those of a sanguine; "resumption," recurrence; "stool," stale; "interfere," interfere with; "physosttigmia," physostigmine (protective).

By inserting a few corrections in your next number of the Journal you will greatly oblige. GEORGE T. PICKERING, M.R.C.V.S.

Oglethorpe, York, January 4th.

IN our last Obituary notice, Harrison, J. Warsop, should have been Harrison, J. *Warcop*.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE Annual Meeting and Dinner of the above Association will be held at the Victoria Hotel, Victoria Street, Manchester, on Friday, February 8th. Meeting at 4.30, dinner at 6. ARTHUR LEATHER, *Hon. Sec.*

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from A. J. Haslam, A.V.D., India; R. Rutherford, Edinburgh; D. C. Pallin, A.V.D., Dorchester; J. J. Meyrick, C.B., A.V.D., Dublin; T. Marriott, A.V.D., Sialkot, India; G. T. Pickering, York; I. Mills, A.V.D., Ireland; W. Littlewood, Cairo; Edgar D. Johnson, London; G. Oliphant, Umballa, India; T. Greaves, Manchester; J. McKenny, Dublin; A. Genocchi, Turin; J. H. B. Hallen, Meerut; G. Thatcher, London; G. A. Banham, Cambridge; W. R. Davies, Isle of Man; J. Brett, Mansfield, Woodhouse, Notts; F. Smith, Aldershot; Fitz. Eassie, London; A. W. Hill, London; J. W. Hill, Hastings; A. E. Macgillivray, Banff; W. L. Williams, Bloomington, Illinois; T. Flintoff, A.V.D., Dublin; "M.R.C.V.S."; S. Villars, Harrow; A. Leather, Liverpool; F. Gregory.

BOOKS AND PAMPHLETS: *R. W. Burke, M.R.C.V.S.*, The Tropical Diseases of the Horse; *Dr. T. Graham Balfour*, Inaugural Address delivered before the Statistical Society; *A. M. Davies*, The Food of the Soldier; *H. Campbell, M.D.*, The Causation of Disease.

JOURNALS, ETC.: *Live Stock Journal; Mark Lane Express; Agricultural Journal; Medical Press and Circular; Clinica Veterinaria; Repertorium der Thierheilkunde; Journal of the Agricultural Society of Victoria; Der Thierarzt; Revue Vétérinaire; Wochenschrift für Thierheilkunde und Viehzucht; Archiv fur Wissenschaftliche und Praktische Thierheilkunde; Echo Vétérinaire; Le Répertoire; American Veterinary Review; Recueil de Médecine Vétérinaire; Lancet; British Medical Journal; Annales de Médecine Vétérinaire; American Live Stock Journal; Edinburgh Medical Journal.*

NEWSPAPERS: *Sioux City Journal; Sydney Morning Herald; Irish Sportsman; Bell's Weekly Messenger; New South Wales Daily Telegraph; Allahabad Pioneer; Poona Observer and Civil and Military Gazette; Irish Times; East Anglian Daily Times.*